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Steens Mountain Recreation Area Study

Final Report

for project entitled

Refinement of Recreation Opportunity Spectrum System by Field Studies on Bureau of Land Management Lands in the Steens Mountain Area of Oregon

VOLUME I

Measuring Dispersed Use and Visitor Preferences for Specific Recreation Activities, Settings, and Experiences in the Steens Mountain Study Area

submitted as required by

Cooperative Agreement No. RM-80-148-CA

between

Rocky Mountain Forest and Range Experiment Station
U. S. Forest Service

and

Oregon State University

by

Martha E. Lee, Research Assistant
Perry J. Brown, Department Head
and
Michael J. Manfredo, Assistant Professor

Resource Recreation Management Department
Oregon State University

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Measuring Dispersed Use and Visitor Preferences for Specific Recreation Activities, Settings, and Experiences in the Steens Mountain Study Area

This study was jointly funded by the Oregon State University Forest Research Laboratory and the USDI Bureau of Land Management Division of Recreation and Cultural Resources. Dr. B. L. Driver, Rocky Mountain Forest and Range Experiment Station, USDA Forest Service, assisted as project monitor and reviewer.

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I. INTRODUCTION

Problem

Recreational use of the public lands has been increasing during the past decade and this trend is expected to continue. In particular, dispersed recreation use has been growing in most environments. This increased demand for the natural resource base and requirements outlined in the Federal Land Policy and Management Act of 1976 have focused special attention on obtaining better measures of the volumes and trends in recreation participation and recreation user preferences.

This study of users of the Steens Mountain Recreation area in Oregon is part of a long-term and comprehensive joint research effort by the Rocky Mountain Forest and Range Experiment Station (RMS), Oregon State University (OSU), and the Bureau of Land Management (BLM). The research focuses on identifying and quantifying user preferences for specific recreation opportunities in wilderness, backcountry, and other dispersed recreation environments.[1]

Study Objectives

The specific objectives of the study were:

1. To replicate a procedure (developed by Brown and Driver in Colorado) for identifying and quantifying the

---

[1] Sampling procedures, analytical techniques, and discussion of results presented in this report are very similar to those presented in reports documenting other research (Arkansas River Study Area, Little Sahara Study Area, King Range National Conservation Area). Since one goal of the long-term research was to identify user preferences in a variety of recreation environments, consistent result reporting facilitates future comparison of user preferences in different areas.

recreation-related preferences of recreation users in the Steens Mountain Recreation Area.

2. To measure and quantify recreation participation using roadside interview data and inductive loop counter information, in the Steens Mountain Recreation Area.

In addition, several sub-objectives developed as the research progressed based on information needs of managers. These sub-objectives included: (1) to identify selected demographic characteristics of users of the Steens Mountain Recreation Area; (2) to identify mangement preferences of Steens Mountain users; and (3) to identify user preferences for specific biophysical, social, and managerial attributes of the recreation environment.

Study Area

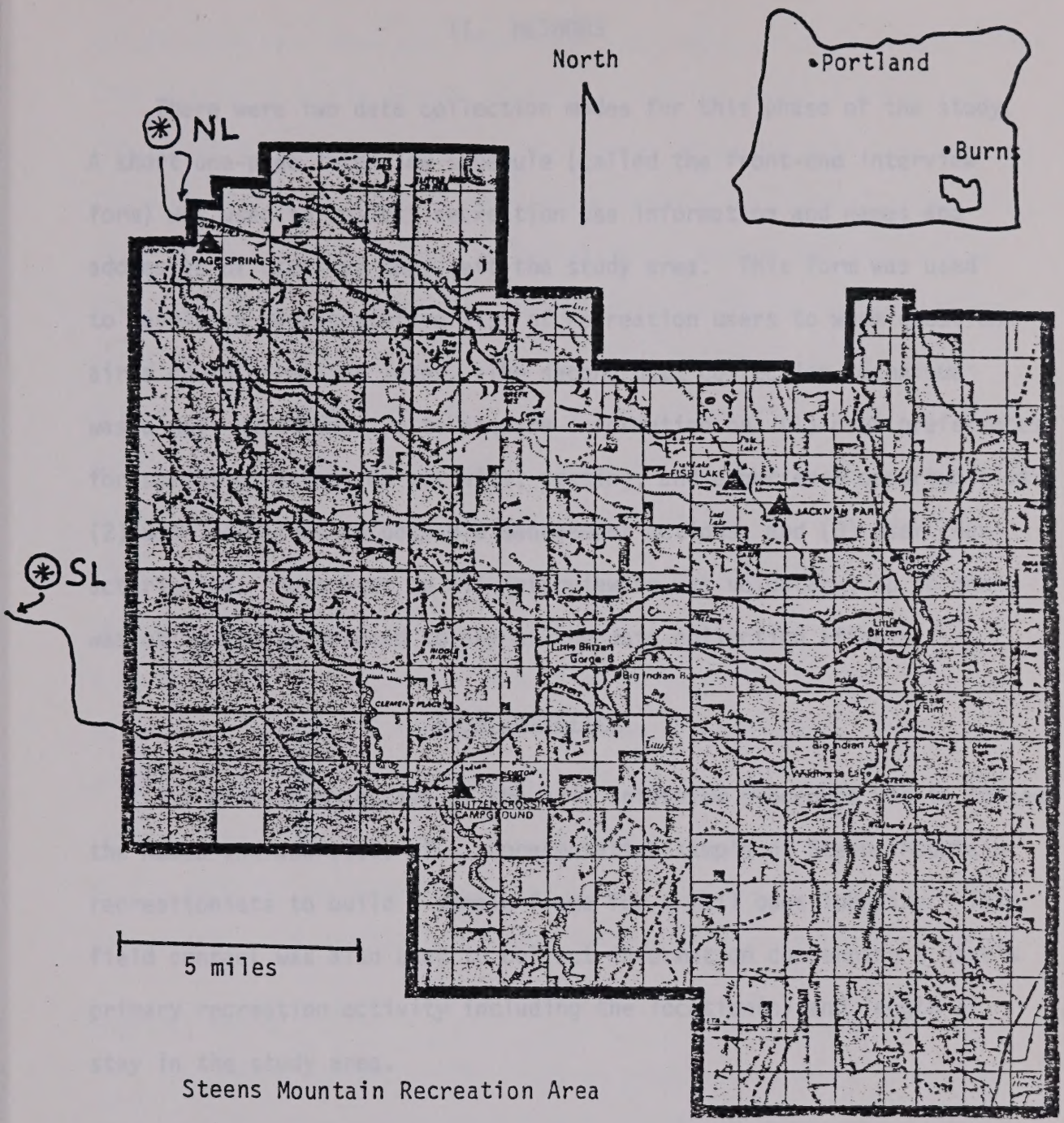
The Steens Mountain Recreation Area in southeastern Oregon covers approximately 194,000 acres of federal, state, and private land administered by the BLM through the Burns District. Steens Mountain, the predominant landmark, is a fault block cut by several large glacier-carved U-shaped gorges. The vegetation varies from sagebrush and juniper at lower elevations, aspen and juniper at mid elevations, and bunchgrass alpine vegetation at the top where the mountain rises to almost 9800 feet. This variety of vegetation types and terrain provide opportunities for both concentrated-developed and dispersed recreation activities. The existing road network on the western slope provides access to developed campsites, lakes, and fishing streams. Other parts of the mountain have less access but do provide dispersed recreation opportunities such as hunting, hiking, fishing, backpacking, and sightseeing.

Use statistics compiled by the BLM indicate approximately 20,000 visits in 1981. The season of use on Steens Mountain is short because of early heavy snowfall, impassable snowpack, and wet weather in the spring. The main road in the area is usually closed from November 1 to July 1, with the heaviest use occurring on the July 4th, and Labor Day holiday weekends and during deer hunting season.

Figure 1 shows a map of the Steens Mountain Recreation Area. For calculating use statistics and determining distributions and types of recreation use, the area was divided into 18 zones labeled A through R. The size and location of each zone was determined by local BLM planners and managers with input from the research team. A traffic-stop interview station was located on each end of the main access road--the Steens Mountain Loop Road (designated by asterisks on the map). Further description of the interviewing procedures is provided in the methods section of this report.

Study Population

The target population for this study consisted of all Steens Mountain Recreation Area recreationists exiting the study area via the north and south ends of the main loop road during the sampling period. The sampling period for the study was from July 4, 1980 through September 15, 1980.



Steens Mountain Recreation Area

Bureau of Land Management

Burns District

Figure 1. Steens Mountain study area.

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II. METHODS

There were two data collection modes for this phase of the study. A short one-page interview schedule (called the front-end interview form) was used to collect recreation use information and names and addresses of users as they left the study area. This form was used to develop a representative list of recreation users to whom questionnaires could be mailed later. The second data collection technique was a mail questionnaire to acquire information on: (1) user preferences for specific recreation activity, setting, and experience opportunities; (2) user reactions to possible management actions; and (3) user characteristics. Responses to all interviewing was voluntary, so no one was obligated to respond to any of the data collection efforts.

Exit Interview

The primary objective of the exit interview procedure was to collect the names and addresses of a representative sample of Steens Mountain recreationists to build a sample frame for a mail questionnaire. This field contact was also used to collect information concerning a user's primary recreation activity including the location(s) and length of stay in the study area.

Interviewing Procedures

In contacting Steens Mountain recreationists, an interview technique proven in various recreation environments over the past several years was used. This technique involves contacting recreationists at interview locations along roadsides as they leave the study area (Figure 1).

At the roadside interview station, vehicles were stopped for

interviewing only when the interviewer had completed the previous interview and could safely extract a vehicle from the normal traffic flow. Once a vehicle was stopped, the interviewer proceeded with the questioning procedure.[2] The interviewer approached and questionned either the driver or a passenger, based on a systematic routine for identifying the interviewee, and conducted the interview while the respondent remained in the vehicle. The reason for shifting the interview from a driver to a passenger was to obtain a more representative list of area users. The drivers exiting recreation areas tend to be males and heads of households. Because our interests were in the opinions and preferences of other users as well, a practical compromise for obtaining a representative sample was to systematically shift between a driver and a passenger. The interviewee was asked to cooperate in the study and to supply a name and address for follow-up questionnaires. Other passengers in the vehicle were asked for their names and addresses if they resided in a different household than the primary respondent. Any people refusing to participate were thanked for their time and allowed to proceed. The average interview time was approximately two minutes.

Sampling Design

The sample design for the roadside interviewing was a stratified random sample clustered by days. The stratification structure partitioned the target population into homogeneous groups based on interview station. A second stratification was used to isolate the weekend, weekday, and holiday users. The size of sample selected from each stratum

[2]For more details, refer to the study plan dated October, 1980.

was proportional to the population (in this case, vehicles or parties passing by the interview station) of that stratum. Within the strata were clusters comprised of days. Each cluster consisted of a day, with the elements of that cluster defined as the population of recreationists exiting the study area on that day. A sample of clusters was taken from the whole sampling period by selecting specific sampling dates. Once the sample of clusters was selected, the actual interview time period within each cluster represented a subsample of the elements of that cluster.

The sampling scheme[3] and the use statistics generated from the survey were limited to the extent that the sample sizes selected for each sampling period could not be estimated from population variance estimates for selected important variables. Sample sizes with specific variance estimates can be calculated for surveys in areas where previous studies have defined, measured, and produced population variance estimates of the same variables to be quantified in a new study. Since data for specific variables needed to produce variance estimates were not available for the study area selected, sample size estimates determined for this study were primarily a function of BLM use estimates, budgetary constraints, and the judgment of research personnel. Further studies will benefit from variance estimates generated ex post facto from this study.

Questionnaire

When users were stopped as they were exiting the study area, a

[3] Refer to the study plan dated October, 1980 for more details about the sampling plan (time and locations).

short, one-page questionnaire (front-end interview form)[4] was used to record their responses. Respondents were first questioned as to whether or not they were primarily on a recreation excursion. Those respondents not on a recreation trip were thanked for their time and directed to proceed on their way. For those recreating in the study area, information was obtained concerning most important recreation activity, location of participation, time spent in the study area, and previous visits to the area in the past 12 months, as well as names and addresses, including zip codes. Observations were also made at the roadisde interview location of the type of vehicle and number of people in the party and vehicle. A summary of the results from the front-end interview analysis (research objective 2) is in Appendix E.[5]

Mail Questionnaire

The mail questionnaire phase of the research was the most important for identifying the recreation-related preferences of visitors to the Steens Mountain Recreation Area. The names and addresses obtained from the front-end interviews constituted the sample frame for distribution of the mail questionnaire.

Mail Questionnaire Content

The mail questionnaire[6] contained questions designed to provide six broad types of information:

---

[4] Appendix A, Figure A-1.

[5] These results were initially documented as part of the Steens Mountain Area Progress Report dated April, 1981.

[6] Appendix A, Figure A-2.

short, open-type questionnaire (front-end interview form)[1] was used to record their responses. Respondents were first questioned as to whether or not they were primarily on a recreation excursion. Those respondents not on a recreation trip were queried for their area and directed to proceed on their way. For those remaining in the study area, information was obtained concerning past important recreation activity, location of particular time spent in the study area, and previous visits to the area in the past 12 months, as well as names and addresses, including zip codes. Observations were also made of the roadside interview location of the type of vehicle and number of people in the party and vehicle. A summary of the results from the front-end interview analysis (research objective 2) is in Appendix B.[2]

Mail Questionnaire

The mail questionnaire piece of the research was the most important for identifying the recreation-related preferences of visitors to the Steens Mountain Recreation Area. The views and information obtained from the front-end interviews contributed the needed focus for distribution of the mail questionnaire.

Mail Questionnaire Content

The mail questionnaire[3] contained questions designed to provide six broad types of information:

---

[1] Appendix A, Figure A-1.

[2] These results were initially documented as part of the Steens Mountain Area Progress Report dated April, 1981.

[3] Appendix A, Figure A-2.

1. questions designed to identify the types of recreation experiences users desire.
2. questions designed to measure users' opinions about possible management actions in the area.
3. questions measuring user preferences for biophysical, social, and managerial attributes inherent to the Steens Mountain area.
4. questions measuring user preferences for conditions of recreation settings as used in Recreation Opportunity Spectrum planning.
5. questions measuring user's travel costs and willingness-to-pay for recreation opportunities (discussed in Volume III of this final report).
6. questions focusing on the demographic characteristics of the users.

Forty "items" were used as questions to identify and measure user preferences for different recreation experiences. These items were selected from a pool of items used in previous studies by Driver and Brown (1978) in other parts of the country. For analysis and data reporting purposes, statistically and logically related items are grouped into scales (i.e., a small group of items defining the same type of recreation experience, such as enjoyment of nature, development of skills, escaping noise back home, etc.). Similar scales can be combined even further into experience domains. Domains are broader concepts than scales, and are composed of one or more scales which together represent a general theme, such as general escape, learning, achievement, etc. This study reports the users' responses to both the scales

and domains described by the selected recreation experience preference items.[7]

The recreation experience preference questions were presented to the respondents using a Likert response format. That format permitted the respondents to indicate the degree to which a particular type of recreation experience was preferred or valued relevant to participation in a particular activity in the Steens Mountain study area. Specifically, these questions asked the degree to which each of the 40 listed experiences would either add to or detract from their satisfaction with their recreation experience. Responses to this format were obtained on a nine-point response format from "most strongly added" to "most strongly detracted."

A second section using a Likert response format solicited users' opinions on specific management issues of special concern to Steens Mountain BLM planners and managers. The 34 questions, focusing on possible management actions, were developed with input from the BLM staff of the Burns District. Users responded on a seven-point response format ranging from "highly desirable" to "highly undesirable."

Implementation of the Recreation Opportunity Spectrum (ROS) planning system, adopted by the BLM for recreation planning, requires knowledge of the attributes of the recreation setting which are perceived by users as important to a satisifying recreation experience. An additional section on the mail questionnaire assessed the degree to which selected resource (environmental) attributes and social conditions affected user satisfaction in the Steens Mountain Study area. The

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[7] Refer to Appendix A, Table A-1 for the complete list of items, scales, and domains used in this study. A list of all items, scales, and domains studied over the last decade can be obtained from B. L. Driver, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.

nine-point "added to - detracted from experience" response format was used to solicit user preferences for 35 selected environmental features and social conditions.

A second question relating to ROS asked respondents to select a description of the recreational experience that best described the experience obtained. This part of the questionnaire had not been used previously and should be considered experimental. Results were to be compared to Steen's Mountain recreation opportunity supply maps produced in a related project and with other selected questionnaire variables.

A third section was included to allow respondents to select a description of the overall setting which best describes the place they recreated. The respondent was also asked about which setting from among four, would be best for their activity. The setting descriptions were based upon existing recreation opportunity planning system criteria.

A major section of the questionnaire contained a set of questions regarding respondents' willingness to pay for the recreation experience. Both standard travel cost and direct questioning approach questions were posed. This section was included to enable the testing of different methods for measuring economic value and results were presented in a separate document (See Volume III of this final report).

Questions about social and demographic characteristics of the recreationists were included to better describe the people visiting the Steens Mountain Recreation Area. Information was obtained concerning each respondent's age, sex, education, community population, and zip code of permanent residence. In addition, respondents were asked about previous visits to the area, primary destination on their trip,

participation in recreation activities, and their most important recreation activity.

Data Collection

Recipients of the mail questionnaires were randomly selected from the sample frame of names and addresses provided by the exit interviewing. A survey packet containing the questionnaire, cover letter, and postage-paid return envelope was mailed to each selected user. Those people who did not respond to the first mailing were sent a second survey packet three weeks after the mailing, and a subsequent third packet three weeks later if no response was recieved after the second mailing. Respondents who completed and returned the questionnaires and that portion of the sample whose survey packets were returned as non-deliverable, were not sent questionnaires during follow-up mailings.

Analysis

Analysis of the mailback questionnaire data using the Oregon State University CYBER 172 computer was done after the questionnaire was coded, keypunched on computer cards, and verified for accuracy. Statistical analysis routines were selected from the Statistical Package for the Social Sciences (Nie et al., 1975) and I-Clust (Revelle 1978) computer packages.[8]

Several statistical programs (frequencies, crosstabs, ANOVA, breakdown, etc.) from the statistical package for the Social Sciences (SPSS) were used to produce descriptive and summary statistics for selected questionnaire data. Data describing visitor characteristics and

---

[8] I-Clust was used to group the recreation experience preference items into scales and domains.

responses to scaled questions were analyzed using the number of responses and percentages in each response category, rank orders means, and standard deviations.

To determine the average response to selected questions, means were computed by dividing the sum of all responses by the number of respondents. When logically related items were grouped into a category (scale), a respondent's scale score was calculated, and scale score means were derived from those values. This procedure consisted of summing the individual item scores (separately for each respondent) and dividing by the number of items in the scale answered by the respondent. The overall mean scale scores were then calculated from the individual respondent scale scores. Since previous research has consistently defined a close association between items belonging to the same scale, respondents only had to answer one item from a scale to have a scale score determined. Similarly, the overall mean domain[9] scores for domains with multiple scales were determined by developing a domain score (from the scale scores) for each respondent and then averaging those scores to get the overall mean domain score across all respondents.

Standard deviations give one indication of the variability or variance of all the responses around the man value. Individual item standard deviations were computed using the standard computational formula found in general statistics books. Standard deviations for

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[9] While most of the descriptive statistics and comparative analyses are presented through discussion of relationships between recreation experience preference scales, the domain values are included on some tables to define logical groupings of scales for interpretation and to documene fully the results of the research.

multiple-item scales were computed by averaging standard deviations of the items within that scale. Multiple-scale domains have standard deviations averaged from the standard deviations of the scales belonging to each domain.

Rank orders are reported to determine the relative importance (highest to lowest) of a series of scores or numbers listed in the tables of this report. The score having the highest value received a rank of one, with subsequent scores ranked sequentially in descending order from highest to lowest. Two or more scores with equal value are ranked the same, but were each counted individually to reflect proper ranking of subsequent data. For example, a column of rank orders might show number one rankings for each of three equal scores followed by the next score ranked fourth. That score was ranked fourth instead of second or third, because there were three scores with higher values.

Respondents were categorized into sub-groups based on the activity which they had identified as being most important on their visit to the Steens Mountain Recreation Area (e.g., sightseeing, camping, fishing, etc.). Further statistical testing of the scaled questions was conducted to determine if sugnificant differences existed between the means of each activity subgroup. A test indicating statistically significant difference ($p \leq .05$)[10] between means suggests that the observed discrepancy would occur by chance alone 5 percent of the time or less. Loosely

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[10] The probability level (P) listed in parentheses defines the range of acceptable probability levels that was used to reject the hypothesis that the differences between the observed (sample) means were due to chance. Significant differences between the means were reported if the tests showed probability levels less than or equal to 5 percent ($p \leq .05$).

interpreted, if the statistical criteria are met there is strong evidence to support the premise that the subgroup means are different.

Since the analysis consisted of more than two subgroups, analysis of variance in conjunction with a Student-Newman-Keuls test was utilized to discern the pairwise differences. The analysis of variance test gave an overall indication of the existence of statistically significant differences ($p \leq .05$). If differences were apparent, a Student-Newman-Keuls test isolated the differences between specific subgroups by comparing all possible combinations (pairs) of sample means. The activity subgroups were also compared on the demographic and socio-economic variables included on the questionnaire. The analysis of variance procedure described above was used to test for subgroup mean differences in age and education.

III. CHARACTERISTICS AND PREFERENCES OF RECREATION USERS

This section of the report focuses on the characteristics and preferences of recreationists in the Steens Mountain Recreation Area based on analysis of the mail questionnaire. The recreationists sampled are characterized by age, sex, education, and community size. User preferences for specific activities, for specific recreation experiences and settings, and for possible management actions and environmental conditions are summarized based on the responses of Steen Mountain recreationists.

Mail Questionnaire Response

The sampling procedures used for exit interviewing in the Steens Mountain study yielded the sample of recreationists used in the mail questionnaire phase of the research. Table 1 shows the response rate for the mail questionnaire, compiled after three mailings. Seventy-seven percent of the people receiving the questionnaire returned it complete and ready for keypunching. Approximately two percent of all the questionnaires mailed were returned as nondeliverable. When these questionnaires were subtracted from the total number mailed, the effective sample size was determined. This figure, along with the number of completed questionnaires, was used to calculate the response rate. Given the sample size, the response rate was considered adequate to produce a representative sample of the population of Steens Mountain Recreation Area recreationists.

Sample Summary Statistics

Characteristics of Visitors to the Steens Mountain Recreation Area

Data on selected demographic characteristics of the Steens Mountain

Table 1. Response to the Steens Mountain questionnaire mailings (Summer 1980).[a]

Sample Size	Non-Deliverable	Effective Sample Size[b]	Returned Complete	Response Rate Percentage[c]
663	12	651	501	77

[a]The questionnaires were sent through the postal system in the winter of 1981.

[b]Effective sample size reflects the number of people actually receiving the questionnaire.

[c]Percentage calculated by dividing the number of returned questionnaires by the effective sample size.

Recreation Area sample are summarized in Table 2. The average age of Steens Mountain respondents was 41 years. Two-thirds of the recreationists sampled were between 26 and 50 years old. Seventy-five percent of the respondents sampled were male.[11] The average level of education was equivalent to two years of college with 70 percent of the respondents having at least one year of college or technical education. The number of users in each of four community size categories (from less than 5,000 to 100,000 or more) was fairly evenly distributed, with the greatest percentage (28 percent) in the 5,000 to 25,000 category. The $21,000 - 24,999 income category was the most common response given (15 percent of respondents) followed by $15,000 - 17,999.

Recreation Activity Summary

Recreationists participated in a wide variety of activities during their visits to the Steens Mountain Recreation area.[12]

The "most important" activity of each respondent was determined by asking which activity was the most important in coming to the Steens Mountain Recreation Area. Responses to this question form the basis for much of the comparative analysis incorporated in this report.

Sightseeing showed the highest percentage of users as a most important activity, followed by camping, lake fishing, hiking and

[11] The sample clearly overrepresents male recreationists. Sampling people in vehicles as they exit the study area provides a difficult setting for randomly selecting respondents. Prospective female respondents invariable do not end up in our name and address sample because: (1) males quickly volunteer answers; (2) females seek help from the males, or (3) the male name is usually given for the mail return questionnaire.

[12] A summary of all activities is found in the Progress Report dated April 1981 (Appendix E).

Table 2. Age, sex, education and community size of respondents sampled in the Steens Mountain Recreation Area (Summer 1980).

Age (N=490)	Age	Percent	
	Under 18	2	
	18 - 25	10	
	26 - 35	32	Mean = 41 years
	36 - 50	32	
	51 - 65	18	
	Over 65	6	
Sex (N=490)	Sex	Percent	
	Male	75	
	Female	25	
Education (N=491)	Years of Formal Education	Percent	
	12 or under	30	
	13 - 16	43	Mean = 15 years
	Over 16	27	
Community Size[a] (N=492)	Population	Percent	
	100,000 or more	20	
	25,000 - 100,000	19	
	5,000 - 25,000	28	
	Below 5,000	22	
	Farms	11	
Income[b] (N=468)	Income	Percent	
	Under 3,000	3	
	3,000 - 4,999	3	
	5,000 - 7,999	6	
	8,000 - 11,999	8	
	12,000 - 14,999	8	
	15,000 - 17,999	10	
	18,000 - 20,999	9	
	21,000 - 24,999	15	
	25,000 - 29,999	11	
	30,000 - 34,999	7	
	35,000 - 39,999	4	
	40,000 - 49,999	6	
	50,000 - 74,999	7	
	75,000 - 100,000	1	
	Over 100,000	1	

[a]Population of the community where the respondent resides.

[b]Houshold income before taxes.

nature study, each with more than 5 percent of the respondents (Table 3). Four "most important" activity groups were established to compare the characteristics and preferences of Steens Mountain users engaged in different recreation activities. Respondents whose "most important" activity was either lake fishing or stream fishing were combined under the heading fishing. The "most important" activity groups are: (1) sightseeing, (2) camping, (3) fishing, and (4) hiking.

Table 4 presents the results of the analysis of user demographic characteristics by subgroups of recreationists based on most important activity. The recreationists whose most important activity was sightseeing tended to be older than those indicating fishing or hiking, and those in the fishing group averaged fewer years of formal schooling than the members of the hiking and camping groups.

Recreation Experience Preferences

A major objective of this research was to identify the recreation experience preferences (REP's) of users of the Steens Mountain Recreation area. This section presents preferences of the Steens Mountain sample.[13]

The 40 REP items analyzed from the mail questionnaire were grouped according to previous research into 35 scales and 19 domains (Table 5). The REP scale scores, like the individual REP item scores, can vary from 9 (most strongly added to experience) to 1 (most strongly detracted from experience). The REP scale scores are ranked as an indication of the relative importance to the recreationists, as a group,

[13] Comprehensive documentation of the REP analysis is included in Appendix B, Table B-1. Included in this table are the means, standard deviations, and numbers of respondents for the REP items, sclaes, and domains for all recreationists sampled in the Steens Mountain Recreation Area.

Table 3. The most important activity of the respondents sampled in the Steens Mountain Recreation Area study (Summer 1980).

Most Important Activity[a]	Number of Respondents	Percent[b]
Sightseeing	152	30
Camping	126	25
Lake Fishing	59	12
Hiking/Walking	28	6
Nature Study	28	6
Big Game Hunting	25	5
Stream Fishing	24	5
Photography	18	4
Backpacking	8	2
Picnicking	8	2
Swimming	5	1
Horseback Riding	5	1
Small Game Hunting	2	<1[c]
Motorcycling	1	<1
Visiting Historical Sites	1	<1
Other Activities	8	2

[a]Activities are listed in descending order based on the number of respondents. Activities which were not listed as a most important activity by any of the respondents are not included in this table.

[b]Percentages are calculated based on N=498 respondents answering this question.

[c]Less than one percent.

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Table 4. Significant difference in age and education between groups based on most important activity of respondents sampled in the Steens Mountain Recreation Area (Summer 1980).

	Most Important Activity Group				
	1 Camping (N=122)[a] Mean	2 Fishing (N=83)[a] Mean	3 Sightseeing (N=147)[a] Mean	4 Hiking (N=28)[a] Mean	Groups that Differ Significantly[b]
Age (years)	40	39	44	35	3>4, 2
Education (years of formal schooling)	15	14	15	16	4, 1>2

[a]Calculations are based on at least the number of respondents indicated by N.

[b]This column indicates that each activity group (1-4) to the left of the ">" has a mean that is significantly greater than the mean of each group to the right, based on the Student-Newman-Keuls test ($p \leq .05$).

Table 5. Recreation experience preference domain and scale (offset to the right) for respondents sampled in the Steens Mountain Recreation Area (Summer 1980).

Recreation Experience Preferences Domain/Scale	Mean[a] Domain	Mean[a] Scale	Rank of Scale Means[b]
Relationships with Nature	8.3		
Scenery		8.5	1
General Nature Experience		8.4	2
Learn about Nature		7.9	7
General Learning	8.0		
General Learning		7.9	7
Exploration		8.1	5
Nostalgia	8.1		
Nostalgia		8.1	5
Exercise/Physical Fitness	7.7		
Exercise/Physical Fitness		7.7	9
Escape Physical Pressure	7.9		
Privacy		7.6	13
Escape Crowds		8.4	2
Escape Physical Stresses		7.7	9
Physical Rest	7.7		
Physical Rest		7.7	9
Escape Personal/Social Pressure	7.8		
Tension Release		7.0	19
Escape Daily Routine		8.2	4
Geography Domain	7.7		
Learning about Topography		7.7	9
Family Togetherness	7.6		
Family Togetherness		7.6	13
Being With People	7.5		
Being with Friends		7.5	15
Being with Similar People		7.4	16
Achievement	6.6		
Reinforce Self Image		6.6	26
Social Recognition		5.5	30
Competence Testing		7.0	19
Seeking Stimulation		7.4	16
Equipment	6.9		
Equipment		6.9	21
Reflect on Personal Values	6.8		
Spiritual		6.8	24
Introspectation		6.9	21
Creativity	6.9		
Creativity		6.9	21
Security	6.7		
Security		6.7	25
Leadership/Autonomy	6.5		
Independence/Autonomy		7.2	18
Control Power		6.6	26
Teaching-Sharing Skills		6.6	26
Leading Others		5.2	34
Escaping Family	5.7		
Escaping Family		5.7	29
Risk Taking	5.5		
Risk Taking		5.5	30
Avoiding the Unexpected		5.4	32
Meeting/Observing New People	5.2		
Meeting New People		5.3	33
Observing Other People		5.0	35

[a]Means are based on responses to a nine-point response format ranging from 9 (most strongly added) to 1 (most strongly detracted). Calculations for each domain or scale are based on at least N=445 respondents. See Appendix B for a more detailed presentation of REP statistics.

[b]Ranks are based on mean scores of the REP scales, with tied scores given the same rank.

of the various types of recreation experiences. Scales with identical means were assigned equivalent ranks, and subsequent ranks were adjusted to reflect the number of scales with higher ranks.

While the scale means for the Steens Mountain sample indicated that all of the scales measured experiences which added to the respondents' satisfaction, the means ranged from 5.0 (neutral) for the Observing Other People scale to an 8.5 (strongly added to experience) for the Scenery scale. Scenery was ranked number one, while the General Nature Experience and Escape Crowds scales tied for the number two ranking. The highest ranking scales belong in the general domains Relationship with Nature and General Learning. All scales in the Risk Taking, Meeting-Observing New People, and Escaping Family domains showed relatively low ranks for the respondents as a whole.

REP Differences Between User Groups

To determine the extent to which recreationists engaged in different activities have different preferences for recreation experiences, REP scale means were computed and ranked for each of the four "most important" activity groups (Table 6). While several REP scales, Scenery, Escape Crowds, and General Nature Experience show fairly consistent high rankings for the four activity groups, other scales indicated differences between the groups. Hikers and sightseers ranked the geography domain higher than campers or fishermen and hikers ranked the privacy scale higher than any of the other three groups.

A more rigorous approach to analyzing the differences on the REP scales between the four most important activity groups is presented in the far right column of Table 6. A Student-Newman-Keuls test in conjunction with analysis of variance ($p \leq .05$) was used to identify pairwise

Table 6. Recreation experience preference domain (D) and scale (S) (offset to the right) means for respondents sampled in the Steens Mountain Recreation Area (Summer 1980).

Recreation Experience Preferences Domain / Scale	Most Important Activity Groups 1 Camping (N=114)[a] Mean[b] D	S	Rank[c] of Scale Means	2 Fishing (N=77)[a] Mean[b] D	S	Rank[c] of Scale Means	3 Sightseeing (N=129)[a] Mean[b] D	S	Rank[c] of Scale Means	4 Hiking (N=24)[a] Mean[b] D	S	Rank[c] of Scale Means	Groups that Differ Significantly[d]
1. Relationships With Nature	8.2			8.2			8.3			8.5			
Scenery		8.4	1		8.5	3		8.6	1		8.6	2	NSD
General Nature Experience		8.3	3		8.6	1		8.4	2		8.6	2	NSD
Learn About Nature		7.8	8		7.6	13		7.9	8		8.4	6	4>1
2. General Learning	7.8			8.0			8.0			8.5			
General Learning		7.8	8		7.8	7		8.0	7		8.4	6	4>1
Exploration		7.9	5		8.1	5		8.1	6		8.6	2	NSD
3. Nostalgia	7.9			8.2			8.2			7.8			
Nostalgia		7.9	5		8.2	4		8.2	5		7.8	12	NSD
4. Exercise/Physical Fitness	7.8			7.8			7.6			8.1			
Exercise/Phys. Fitness		7.8	8		7.8	7		7.6	13		8.1	10	NSD
5. Escape Physical Pressure	7.8			7.9			7.7			8.4			
Privacy		7.6	14		7.6	13		7.4	15		8.5	5	4>1,2,3
Escape Crowds		8.4	1		8.6	1		8.4	2		8.8	1	NSD
Escape Physical Stresses		7.7	12		7.7	10		7.8	10		7.8	12	NSD
6. Physical Rest	7.9			7.7			7.8			7.8			
Physical Rest		7.9	5		7.7	10		7.8	10		7.8	12	NSD
7. Escape Personal/Social Pressure	7.8			7.7			7.9			7.9			
Tension Release		7.0	19		7.0	22		7.2	18		7.1	24	NSD
Escape Daily Routine		8.2	4		8.1	5		8.3	4		8.2	9	NSD
8. Geography Domain	7.7			7.6			7.9			8.4			
Geography		7.7	12		7.6	13		7.9	8		8.4	6	4>1,2
9. Family Togetherness	7.8			7.8			7.8			7.2			
Family Togetherness		7.8	8		7.8	7		7.8	10		7.2	22	NSD
10. Being With People	7.5			7.6			7.4			7.6			
Being With Friends		7.4	16		7.7	10		7.6	13		7.6	17	NSD
Being With Similar People		7.5	15		7.5	17		7.3	16		7.7	15	NSD

Table 6. Continued.

Recreation Experience Preferences Domain / Scale	Most Important Activity Groups 1 Camping (N=114)[a] Mean[b] D	S	Rank[c] of Scale Means	2 Fishing (N=77)[a] Mean[b] D	S	Rank[c] of Scale Means	3 Sightseeing (N=129)[a] Mean[b] D	S	Rank[c] of Scale Means	4 Hiking (N=24)[a] Mean[b] D	S	Rank[c] of Scale Means	Groups that Differ Significantly[d]
11. Achievement	6.4			6.8			6.4			7.2			
Reinforce Self Image		6.4	27		6.7	24		6.3	27		7.5	19	4>2,1,3
Social Recognition		5.3	32		5.8	29		5.3	33		5.6	31	NSD
Competence Testing		6.6	23		7.3	19		6.6	24		7.7	15	4,2>1,3
Seeking Stimulation		7.2	17		7.6	13		7.3	16		7.9	11	NSD
12. Equipment	6.7			7.2			6.6			6.9			
Equipment		6.7	20		7.2	20		6.6	24		6.9	26	2>1,3
13. Reflect on Personal Values	6.7			6.6			6.9			7.4			
Spiritual		6.7	20		6.5	27		6.7	23		7.3	21	NSD
Introspection		6.6	23		6.7	24		7.0	19		7.5	19	NSD
14. Creativity	6.7			6.6			6.8			7.2			
Creativity		6.7	20		6.6	26		6.8	21		7.2	22	NSD
15. Security	6.6			6.9			6.8			6.6			
Security		6.6	23		6.9	23		6.8	21		6.6	28	NSD
16. Leadership/Autonomy	6.5			6.7			6.3			7.0			
Independence/Autonomy		7.1	18		7.4	18		6.9	20		7.6	17	NSD
Control Power		6.6	23		7.2	20		6.4	26		6.8	27	2>1,3
Teaching-Sharing Skills		6.4	27		6.3	28		6.1	28		7.0	25	NSD
Leading Others		5.3	32		5.4	33		5.1	34		5.8	30	NSD
17. Escaping Family	5.5			5.8			5.6			5.3			
Escaping Family		5.5	29		5.8	29		5.6	29		5.3	32	NSD
18. Risk Taking	5.5			5.8			5.4			5.2			
Risk Taking		5.5	29		5.7	32		5.5	30		6.1	29	NSD
Avoiding The Unexpected		5.5	29		5.8	29		5.4	32		4.3	34	2,1,3,>4
19. Meeting/Observing new People	5.2			5.3			5.3			4.7			
Meeting New People		5.3	32		5.2	34		5.5	30		5.0	33	NSD
Observing Other People		4.6	35		5.1	35		4.6	35		3.9	35	NSD

Table 6 Continued

[a]Calculations for each domain or scale are based on at least the number of respondents indicated by N.

[b]Means are based on responses to a 9-point response format ranging from 9 (Most Strongly Added) to 1 (Most Strongly Detracted). See Appendix B for a more detailed presentation of activity group REP statistics.

[c]Ranks are based on mean scores on the REP scales, with tied scores given the same rank.

[d]This column indicates that each activity group (1-4) to the left of the ">" has a mean that is significantly greater than the mean of each group to the right, based on the Student-Newman Keuls test ($p \leq .05$). Some REP scales showed no significant differences (NSD) between the activity groups.

differences between the activity group means. The activity groups can be identified by numbers assigned in the activity group column headings. Under the column labeled "Groups That Differ Significantly", any activity groups (1, 2, 3, or 4) that are left of the ">" (greater than) sign have means that are significantly larger than the means of any groups (1, 2, 3, or 4) to the right of the sign. There is direct (one-to-one) statistical relationship between the activity groups separated by a (>) sign. For example, on the Equipment scale, fishermen (group 2) have a mean that is significantly greater than the means of both the campers (group 1) and sightseers (group 3). On this scale the hikers (group 4) have an intermediate mean that is not significantly different from the groups at either extreme. An NSD notation in the column indicates that "no significant differences" were found between any of the activity group means of the appropriate REP scale.

In general, while the activity groups are similar with regard to the value placed on many of the REP scales, several interesting patterns are apparent. First, the hikers are separated from most or all of the other groups by their greater perceived satisfaction on the scales in the General Learning, Escape Physical Pressure, and Achievement domains, and the scales Geography and Avoiding the Unexpected.

Second, fishermen placed more emphasis on equipment, as one would expect, than campers or sightseers.

Meeting and Observing Other People scales were ranked the lowest by all four groups with hikers having the lowest means and indicating this detracted from their recreation experience in the Steens Mountain area.

While Table 6 clearly identifies the REP differences between subgroups, it is often difficult to determine which of these differences

are relevant to land management planning. The statistical tests only give the manager a list of REP differences and a measure of predictability or confidence in knowing the groups are different, not a measure of the usefulness or importance of these differences. Subjective appraisal of the experiences measured by each REP dimension is needed to isolate which experiences relate the most to the recreation resource, which experiences are valued the most and least by users, and which experiences can be influenced the most by management practices.

Management Action Preferences

To provide Steens Mountain Recreation Area managers with information about user preferences for potential management practices, 35 "possible management actions" were presented to the respondents. This section of the report summarizes the results of these questions, including: (1) a summary of management action preferences of the overall sample of Steens Mountain recreationists; and (2) differences in preferences of groups based on the selected "most important" activities.

Table 7 lists the means, standard deviations, and rank orders of the management items presented to all respondents of the mail questionnaire. Seven of the management actions were favored at least "moderately" by the Steens Mountain recreationists. Providing pamphlets describing the natural history, geologic features, and historic sites of the area and keeping campgrounds as rustic as possible were among the most desirable actions, while management actions indicating further development of the area and closing part of the main loop road were slightly to moderately undesirable to respondents.

The means listed in Table 7 do not give a clear picture of the management actions. One measure of the variability in user responses

Table 7. Management item means and standard deviations for all respondents sampled in the Steens Mountain Recreation Area (Summer 1980).

Possible Management Actions	Mean[a]	S.D.[b]	Rank Order[c]
Make available pamphlets describing the natural and geological features of the area	6.0	1.5	1
Provide a pamphlet describing the natural history, flora, and geology of the area	5.9	1.4	2
Keep campgrounds as rustic as possible with few facilities	5.8	1.5	3
Provide a pamphlet of locations of historic sites in the area	5.8	1.5	3
Make available a short pamphlet describing the history of Indian occupation in the Steens	5.7	1.4	5
Provide a pamphlet which describes the pioneer history of the area	5.5	1.4	6
Distribute detailed Steens maps	5.2	1.8	7
Limit vehicles to certain areas only	5.2	1.9	7
Place signs along loop road which point out locations of historic interest	5.0	1.8	9
Require pets be kept on a leash in campgrounds	5.0	1.9	9
Make information available on where camping and picnic facilities are located in the Steens	4.9	1.7	11
Distribute maps showing campsites in the area according to how heavily they are used	4.8	1.7	12
Develop long distance backpacking trails	4.8	1.8	12
Place special creel limits which reduce the number of fish to be taken in the Steens	4.5	1.9	14
Place more trash cans along Loop Road	4.4	1.6	15
Construct more short day use hiking trails	4.2	1.8	16
Adopt regulations which restrict some lakes and streams to fly fishing only	4.2	2.0	16
Have more rangers for law enforcement	4.1	1.6	18
Provide more directional signs on Loop Road	4.1	1.7	18
Develop visitor center near Frenchglen	4.1	1.8	18
Construct more viewing areas along Loop Road	4.0	1.8	21
Limit length of stay at campgrounds to five days	4.0	2.0	21
Develop rustic shelters for winter recreation	4.0	1.8	21
Place more mileage signs on Loop Road	3.8	1.7	24
Distribute information packets describing locations of good fishing	3.7	1.9	25
Keep Loop Road open to Fish Lake in winter	3.4	1.7	26
Make more pull off areas along the Loop Road with picnic tables and fire grills	3.4	1.9	26
Develop more trails for horse riding	3.3	1.6	28
Require a fee at all campgrounds	3.2	1.9	29
Construct more campgrounds along Loop Road	3.1	1.9	30
Improve campgrounds to have more facilities (such as running water, flush toilets, etc.)	3.0	1.8	31
Keep Loop Road open through the winter	3.0	1.8	31
Permanently close Loop Road from Jackman Park to near Blitzen Crossing	2.7	1.8	33
Pave Loop Road	2.4	1.9	34

[a]Means are based on responses to a seven-point response format ranging from 7 (highly desirable) to 1 (highly undesirable). Calculations for each management action are based on at least N=459 respondents.

[b]Standard deviation (S.D.) is a measure of variation in the responses around the mean.

[c]Ranks are based on mean scores on the possible management actions, with tied scores given the same rank.

to the management actions is given by the standard deviations. Several standard deviations in Table 7 are large, indicating that the respondents varied quite a bit in their preferences, resulting in answers widely distributed around the mean. This dispersion is illustrated in Table 8 by the percentage distribution of individual answers in each response category. For example, the mean for the management item to limit length of stay at campgrounds to five days is 4.0. Yet, only 34 percent of the sample answered in the response category (4) or "neutral," the mean. Almost 20 percent of the sample answered in response categories 7, i.e., "highly desirable" (17 percent) or 1, i.e., "highly undesirable" (18 percent), indicating strong opinions. The large standard deviation (2.0) for that item reflects this lack of consensus. While the mean responses indicate the average of all Steens Mountain Recreation Area users, there was considerable disagreement on many of the actions.

Preferences of Recreationists in Selected Activity Groups

Recreationists in several of the "most important" activity groups held significantly different opinions on six of the 34 possible management actions, based on the Student-Newman-Keuls test ($p \leq .05$). As seen in Table 9, though all groups have fairly neutral mean scores, differences occur between sightseers and other groups on management actions proposing increased development and/or closure of the main loop road. Sightseers are most negative towards permanently closing part of the road also. Differences are also evident between fishermen and others on proposed actions dealing with fishing regulations. They are more negatively affected by actions limiting access and proposing creel limits than other groups.

Table 8. Preferences for possible management actions of respondents sampled in the Steens Mountain Recreation Area (Summer 1980).

Possible Management Actions	Highly Desirable (7) Percent[a]	Moderately Desirable (6) Percent[a]	Slightly Desirable (5) Percent[a]	Neutral (4) Percent[a]	Slightly Undesirable (3) Percent[a]	Moderately Undesirable (2) Percent[a]	Highly Undesirable (1) Percent[a]	Number of Respondents
Make available pamphlets describing natural and geological features	48	25	12	8	2	<1	5	472
Make more pull-off areas along the Loop Road with tables and grills	5	10	15	19	12	13	24	471
Construct more short day use hiking trails	9	16	21	27	7	7	13	468
Pave Loop Road	6	4	7	12	8	9	54	463
Develop more trails for horse riding	3	4	11	40	8	9	24	465
Construct more campgrounds along Loop Road	5	8	14	16	13	11	32	473
Provide more directional signs on Loop Road	8	12	20	33	9	5	14	466
Place more mileage signs on Loop Road	5	9	17	37	8	7	17	459
Limit vehicles to certain areas only	36	16	16	17	3	3	10	470
Place more trash cans along Loop Road	12	13	23	31	6	5	8	471
Require pets be kept on a leash in campgrounds	35	11	11	26	4	4	8	478
Limit length of stay at campgrounds to five days	17	8	8	34	9	7	18	473
Require a fee at all campgrounds	7	5	8	32	9	9	30	465
Improve campgrounds to have more facilities (such as running water, flush toilets, etc.)	6	4	10	25	11	12	32	468
Keep campgrounds as rustic as possible with few facilities	51	17	12	12	3	1	4	478
Keep Loop Road open through winter	6	4	7	35	4	9	35	472
Make information available on where camping and picnic facilities are located in the Steens	22	18	22	24	4	3	7	479
Distribute information packets describing locations of good fishing	10	9	14	28	9	8	21	475
Distribute detailed Steens maps	33	20	18	14	3	4	7	462
Distribute maps showing campsites in the area according to how heavily they are used	18	16	23	28	4	2	8	473

Table 8 Continued

Possible Management Actions	Highly Desirable (7) Percent[a]	Moderately Desirable (6) Percent[a]	Slightly Desirable (5) Percent[a]	Neutral (4) Percent[a]	Slightly Undesirable (3) Percent[a]	Moderately Undesirable (2) Percent[a]	Highly Undesirable (1) Percent[a]	Number of Respondents
Provide a pamphlet describing the natural history, flora and geology of the area	48	23	15	8	1	<1	4	477
Provide a pamphlet of locations of historic sites in the area	44	23	19	8	2	<1	4	476
Develop rustic shelters for winter recreation	9	12	18	34	6	4	18	472
Develop a visitor center near Frenchglen	11	12	22	28	5	5	16	472
Construct more viewing areas along Loop Road	9	12	18	27	9	8	16	472
Keep Loop Road open to Fish Lake in winter	6	6	9	41	7	7	24	469
Permanently close Loop Road from Jackman Park to Blitzen Crossing	6	2	3	27	9	11	42	460
Provide a pamphlet which describes the pioneer history of the area	32	22	23	16	2	<1	3	471
Make available a short pamphlet describing the history of Indian occupation in the Steens	37	25	21	13	1	<1	3	471
Adopt regulations which restrict some lakes and streams to fly fishing only	19	10	12	31	7	5	16	470
Place special creel limits which reduce the number of fish to be taken in the Steens	21	13	12	31	5	4	13	470
Place signs along the Loop Road which point out locations of historic interest	24	18	25	15	7	4	7	471
Develop long distance backpacking trails	23	15	16	31	3	3	9	467
Have more rangers for law enforcement	9	8	16	44	7	3	11	468

[a] Percentages are based on the total number of respondents answering each possible management action.

Table 9. Management actions showing significant differences between mean responses of groups based on most important activity of respondents sampled in the Steens Mountain Recreation Area (Summer 1980).

Possible Management Actions	Most Important Activity Groups 1 Camping (N=119)[a] Mean[b]	2 Fishing (N=76)[a] Mean[b]	3 Sightseeing (N=134)[a] Mean[b]	4 Hiking (N=27)[a] Mean[b]	Groups that Differ Significantly[c]
Develop more trails for horse riding	3.4	3.1	3.6	2.6	3>2,4
Place more mileage signs on Loop Road	4.0	4.2	4.4	3.4	3>4
Construct more viewing areas along Loop Road	3.8	4.3	4.4	3.3	3>1 & 3,2>4
Permanently close Loop Road from Jackman Park to near Blitzen Crossing	2.7	3.0	2.3	3.6	2,4>3
Adopt regulations which restrict some lakes and streams to fly fishing only	4.2	3.5	4.4	5.1	4,3,1>2
Place special creel limits which reduce the number of fish to be taken in the Steens	4.5	4.1	4.6	5.4	4>2

[a] Calculations for each management item are based on at least the number of respondents indicated by N.

[b] Means are based on responses to a 7-point format from 7 (highly desirable) to 1 (highly undesirable). See Appendix C for a more detailed presentation of management item statistics for activity groups.

[c] This column indicates that each activity group (1-4) to the left of the ">" has a mean statistically greater than the mean of each group to the right, based on the Student-Newman Keuls test ($p \leq .05$).

Recreation Setting Attribute Preferences

An important component of recreation demand is the value placed on attributes of the biophysical, social, and managerial environments. This section presents the results of questions which focused directly on assessing user attribute preferences. Included here are: (1) overall user preferences for environmental features; (2) differences in environmental feature preferences of users participating in different "most important" activities; (3) overall social condition preferences of the Steens Mountain sample; and (4) differences in social condition preferences of "most important" activity groups.

Steens Mountain Recreationists' Preferences for Environmental Attributes

Environmental conditions such as wildlife, vegetation, and recreation development present may have a strong influence on the ability of recreation resource users to realize the quality recreation experience they desire. Thirty-one items describing specific environmental features were included and respondents indicated how much each feature would add to or detract from their recreation experience.

Table 10 presents the mean and rank orders for the 31 environmental feature preference items. Scenic vistas, wide panoramas, steep canyons, mule deer, and high mountain lakes strongly added to recreation experiences of Steens Mountain users. Motorized traffic and powerlines nearby ranked the lowest, detracting the most from recreation experiences.

Preferences of Recreationists from Selected Activity Groups. The Student-Newman-Keuls analysis for mean differences between "most important" activity groups on their preferences for environmental features is

Table 10. Environmental feature preference scale means for respondents sampled in the Steens Mountain Recreation Area (Summer 1980).

Environmental Feature Items	Mean[a]	S.D.[b]	Rank Order[c]
Wide panoramas	8.3	1.1	1
Scenic Vistas	8.3	1.1	1
Rugged canyonland areas	8.1	1.1	3
Mule deer	8.0	1.2	4
Steep, rugged hillsides	8.0	1.2	4
High mountain lakes	7.8	1.3	6
Maps of the area	7.4	1.8	7
Good stream fishing	7.2	1.7	8
Coyotes in the distance	7.2	1.8	8
No motorized traffic apparent	6.9	1.8	10
No evidence of man	6.8	2.0	11
Wild horses	6.6	2.1	12
Sparse vegetation	6.3	2.0	13
Infrequently used dirt roads	6.0	2.3	14
Abandoned buildings	6.0	2.0	14
Abandoned mines	5.9	1.8	16
Designated fire pits	5.8	2.4	17
No evidence of recreation management in the area	5.7	2.4	18
Well maintained hiking trails	5.7	2.2	18
Outhouse-type toilets	5.6	2.4	20
Cattle grazing	5.5	2.3	21
Picnic tables	5.3	2.4	22
Small man-built reservoirs in the area	5.3	2.1	22
Evidence that cattle had been in the area	5.2	2.2	24
Developed campgrounds	5.0	2.6	25
Rough roads on which only four wheel drive vehicles can travel	5.0	2.6	25
Fences	4.1	2.0	27
Motorized traffic in distance	4.0	1.9	28
Dirt roads on which traffic is frequent	3.7	2.3	29
Motorized traffic nearby	3.1	2.0	30
Powerlines in the area	3.1	2.0	30

[a]Means are based on responses to a 9-point response format ranging from 9 (most strongly added) to 1 (most strongly detracted). Calculations are based on at least N=455 respondents.

[b]Standard deviation (S.D.) is a measure of variation in the responses around the mean.

[c]Ranks are based on mean scores, with tied scores given the same rank.

Table 10. Environmental feature preference scale means for respondents residing in the Steens Mountain Recreation Area (summer 1982)

Environmental feature items	Mean[a]	Std. dev.	Rank order[b]
Wide panorama	6.6	0.8	1
Scenic vistas	6.4	0.9	2
Rugged canyonland areas	6.1	1.1	3
Mule deer	6.0	1.2	4
Steep, rugged hillsides	5.9	1.3	5
High mountain lakes	5.7	1.4	6
Edge of the area	5.6	1.5	7
Good stream fishing	5.5	1.5	8
Coyotes in the distance	5.3	1.6	9
No motorized traffic sounds	5.2	1.8	10
No evidence of man	5.0	1.9	11
Wild horses	4.9	1.9	12
Sparse vegetation	4.7	1.9	13
Infrequently used dirt roads	4.5	2.0	14
Abandoned outbuildings	4.3	2.0	15
Abandoned mines	4.1	1.9	16
Designated fire pits	4.0	2.0	17
No evidence of recreation management in the area	3.7	2.1	18
Well maintained hiking trails	3.6	2.0	19
Dutchman-type tailors	3.4	2.0	20
Cattle grazing	3.3	2.0	21
Private cabins	3.2	2.0	22
Small non-built reservoirs in the area	3.1	2.1	23
Evidence that cattle has been in the area	3.0	2.0	24
Developed campgrounds	2.9	1.9	25
Rough roads on which only four wheel drive vehicles can travel	2.8	2.0	26
Fences	2.7	2.0	27
Motorized traffic in distance	2.6	1.9	28
Dirt roads on which traffic is frequent	2.5	2.0	29
Motorized traffic nearby	2.4	2.0	30
Powerlines in the area	2.3	2.0	31

[a]Means are based on responses to a seven-point response format ranging from 0 (least strongly agreed) to 7 (most strongly agreed). Calculations are based on those who had at least viewed the area.

[b]Ordinary derivation (0.2) is a measure of variation in the responses around the mean.

[c]Ranks are based on mean scores, with item 1 being the most preferred.

shown in Table 11. On the 20 environmental feature items showing differences, the largest differences generally occur between hikers and all other groups. Hikers are least accepting of recreation development items such as toilets and picnic tables, traffic nearby, and powerlines, fences, and old mines. As expected, fishermen rate good stream fishing higher than other groups and are less concerned with scenic vistas and wide panoramas than others, particularly sightseers. Sightseers and hikers rated rugged canyonland areas higher than fishermen and campers.

Steens Mountain Users' Preferences for Social Conditions

Social conditions of a setting may also influence quality recreation experiences. Five social items describing seeing other groups of recreationists were included on the Steens Mountain questionnaire. Seeing only 1-2 other recreation groups in a day adds to experiences of Steens Mountain recreationists while seeing any more than six other groups in a day detracts, as does seeing recreationists in four-wheel drive vehicles (Table 12).

Preferences of Recreationists from Selected Activity Groups. Three of the five social condition items showed differences among the four groups (Table 13). Hikers were less accepting of seeing more than three other groups of recreationists and seeing recreationists in four-wheel drive vehicles than any of the other three groups.

Users' Descriptions of Recreation Experience

Steens Mountain recreationists were given a choice of four experience descriptions and asked to indicate which best described the type of experience they had in their chosen setting in the Steens area

Table 11. Environmental feature items showing significant differences between mean responses of groups based on most important activity of respondents sampled in the Steens Mountain Recreation Area (Summer 1980).

Environmental Features	Most Important Activity Groups				
	1 Camping (N=116)[a] Mean[b]	2 Fishing (N=73)[a] Mean[b]	3 Sightseeing (N=132)[a] Mean[b]	4 Hiking (N=26)[a] Mean[b]	Groups that Differ Significantly[c]
Rugged canyonland areas	8.1	8.0	8.3	8.7	4,3>1,2
Good stream fishing	7.3	8.3	6.9	7.0	2>1,4,3
Wide panoramas	8.3	8.1	8.5	8.5	3>2
Scenic vistas	8.3	7.9	8.5	8.6	4,3,1>2
Developed campgrounds	5.5	5.3	5.1	3.0	1,2,3>4
Outhouse-type toilets	6.1	5.8	5.8	3.6	1,2,3>4
Picnic tables	6.4	5.9	5.6	3.2	1>3 & 1,2,3>4
Designated fire pits	6.4	6.3	5.9	3.9	1,2,3>4
Rough roads on which only four wheel drive Vehicles can travel	5.5	5.2	4.8	3.0	1,2,3>4
Infrequently used dirt roads	6.4	5.9	6.2	4.2	1,3,2>4
Dirt roads on which traffic is frequent	4.0	3.8	4.1	2.3	3,1,2>4
Motorized traffic nearby	3.1	3.2	3.5	2.1	3,2,1>4
Motorized traffic in distance	4.1	3.9	4.1	2.9	1,3,2>4
No motorized traffic apparent	6.7	7.1	6.5	8.1	4>2,1,3
Cattle grazing	5.7	5.6	6.0	4.4	3,1,2>4
Evidence that cattle had been in the area	5.3	5.3	5.6	4.0	3,1,2>4
Small man-built reservoirs in the area	5.5	5.5	5.3	3.3	1,2,3>4
Powerlines in the area	3.2	3.8	3.1	2.1	2,1,3>4
Fences	4.4	4.3	4.0	3.1	1,2,3>4
Abandoned mines	6.0	6.1	6.1	5.0	2,3,1>4

[a]Calculations for each environmental item are based on at least the number of respondents indicated by N.

[b]Means are based on a 9-point response format from 9 (most strongly added) to 1 (most strongly detracted). See Appendix D for a more detailed description of environmental feature item statistics for activity groups.

[c]This column indicates that each activity group (1-4) to the left of the ">" has a mean that is significantly greater than the mean of each group to the right, based on the Student-Newman-Keuls test ($p \leq .05$).

Table 12. Social item means and standard deviations for all respondents sampled in the Steens Mountain Recreation Area (Summer 1980).

Social Items	Mean[a]	S.D.[b]	Rank Order[c]
More than 15 other recreation groups encountered on a given day	2.5	1.9	1
Other recreationists in four-wheel drive vehicles	3.3	2.3	2
6-15 other recreation groups encountered on a given day	3.5	2.1	3
3-6 other recreation groups encountered on a given day	5.2	2.1	4
Only 1-2 other recreation groups encountered on a given day	6.8	2.1	5

[a] Means are based on responses to a 9-point response format ranging from 9 (most strongly added) to 1 (most strongly detracted). Calculations for each item are based on at least N=433 respondents.

[b] Standard deviation (S.D.) is a measure of variation in the responses around the mean.

[c] Social items are ranked in descending order based on the degree to which each was considered to detract from the experience.

Table 13. Social items showing significant differences between mean responses of groups based on most important activity of respondents sampled in the Steens Mountain Recreation Area (Summer 1980).

Social Items	Most Important Activity Groups				Groups that Differ Significantly[c]
	1 Camping (N=111)[a] Mean[b]	2 Fishing (N=71)[a] Mean[b]	3 Sightseeing (N=122)[a] Mean[b]	4 Hiking (N=24)[a] Mean[b]	
3-6 other recreation groups encountered on a given day	5.5	5.2	5.8	4.0	3,1,2>4
6-15 other recreation groups encountered on a given day	3.6	3.8	4.1	2.4	3,2,1>4
Other recreationists in four-wheel drive vehicles	3.3	3.5	3.8	1.8	3,2,1>4

[a] Calculations for each environmental item are based on at least the number of respondents indicated by N.

[b] Means are based on a 9-point response format from 9 (most strongly added) to 1 (most strongly detracted). See Appendix C for a more detailed description of social item statistics for activity groups.

[c] This column indicates that each activity group (1-4) to the left of the ">" has a mean that is significantly greater than the mean of each group to the right, based on the Student-Newman-Keuls test ($p \leq .05$).

(Table 14). Most users experienced moderate amounts of solitude though affiliation with other groups did occur. Only a small percentage (7 percent) indicated an experience characterized by little opportunity for solitude and where interaction with others was common.

Responses to this question were compared with classification of recreation settings in the Steens Mountain Recreation Area using the Recreation Opportunity Spectrum (ROS) (Table 15). Recreationists in settings zoned as semi-primitive nonmotorized (SPNM) described their experience as having mainly high or moderate degrees of solitude (40 and 35 percent, respectively). Users in settings clssed as providing semi-primitive motorized (SPM) recreation opportunities described their experiences somewhat similarly to those in semi-primitive nonmotorized but experienced lower levels of solitude. Recreationists in settings zoned as providing roaded natural (RN) recreation opportunities experienced lesser degrees of solitude than users in SPM or SPNM-classed settings.

Recreation Setting Characteristics and the Recreation Opportunity Spectrum (ROS)

Using characteristics and descriptions based on existing Recreation Opportunity Spectrum (ROS) criteria, recreationists were asked to describe their recreation setting and to indicate the recreation setting they would prefer. Seven setting characteristics were used: remoteness, environment, other users, regulations, facilities, other resource uses, and access, with 3-4 setting description choices for each characteristic. These setting descriptions represent four ROS classes-primitive (P), semi-primitive nonmotorized (SPNM), semi-primitive motorized (SPM), and roaded natural (RN). Semi-primitive nonmotorized and semi-primitive motorized were combined into one class for several of the characteristics.

Table 14. Descriptions of recreation experiences of Steens Mountain users (Summer 1980).

Recreation Experience Description	Number of Respondents	Percent[a]
An experience characterized by a high degree of solitude and isolation from the sights and sounds of human activity	88	18
An experience characterized by a moderate degree of solitude and isolation from the sights and sounds of human activity	214	44
An experience in which there was some opportunity for solitude but affiliation with other user groups occurred a good part of the time	151	31
An experience in which affiliation with other user groups was quite common and the opportunity for solitude was low	35	7

[a] Percentage values are based on N=488 respondents answering this question.

Table 15. Comparison of experience descriptions and ROS classification of settings in Steens Mountain Recreation Area (Summer 1980).

Recreation Experience Description	ROS Zone[a] SPNM (N=60) Number	Percent	SPM (N=58) Number	Percent	RN (N=331) Number	Percent
An experience characterized by a high degree of solitude and isolation from the sights and sounds of human activity	24	40	17	29	36	11
An experience characterized by a moderate degree of solitude and isolation from the sights and sounds of human activity	21	35	26	45	148	45
An experience in which there was some opportunity for solitude but affiliation with other user groups occurred a good part of the time	11	18	11	19	123	37
An experience in which affiliation with other user groups was quite common and the opportunity for solitude was low	4	12	4	7	24	7

[a] There were no settings in the Steens Mountain area classified as providing primitive (P) recreation opportunities.

Table 16 compares descriptions of recreation settings where Steens Mountain users recreated and their preferred recreation settings for each of the seven characteristics. The majority of respondents who described their settings as providing primitive (P) recreation opportunities also indicated that primitive (P) was the setting they preferred for all characteristics examined. The same was true to a lesser extent for users describing their settings as semi-primitive, although for several of the characteristics many users indicated a preference for more primitive conditions. For example, in terms of remoteness, although 51 percent of respondents described their settings as SPNM and preferred a setting with that same level of remoteness, 38 percent of those describing their settings as SPNM preferred a setting classed as primitive. Users describing their settings as semi-primitive seem to prefer more primitive conditions. Users describing their settings as providing roaded natural (RN) recreation experiences preferred more primitive settings for all characteristics examined except Access, where a majority (56 percent) of those describing their settings as RN preferred that same setting description. For remoteness particularly, 26 percent of those describing their setting as RN preferred a setting providing primitive recreation opportunities.

To get a more accurate picture of recreationists' descriptions of Steens Mountain settings, cases were selected from the sample where the setting respondents indicated they had recreated was also the setting description they preferred, for each of the seven setting characteristics listed. These setting descriptions were then compared with classification of Steens Mountain recreation settings previously mapped using ROS. Recreationists tended to describe settings as being

Table 16. Comparison between descriptions of Steens Mountain Settings recreated in, and preferred recreation settings (Summer 1980).

Characteristic/ Setting Recreated in	Preferred Setting P Number	P Percent	SPNM Number	SPNM Percent	SPM Number	SPM Percent	RN Number	RN Percent	Total Number
Remoteness									
P	50	89	4	7	1	2	1	2	56
SPNM	43	38	58	51	13	11	0	0	114
SPM	50	27	62	33	71	38	4	2	187
RN	30	26	46	39	32	27	9	8	117
Environment									
P	39	78	7	14	3	6	1	2	50
SPNM	22	33	37	56	5	8	2	3	66
SPM	13	7	49	28	104	60	7	4	173
RN	32	18	33	18	58	32	58	32	181
Other Users									
P	48	86	7[a]	12			1	2	56
SP[a]	71	30	158	67			7	3	236
RN	44	25	113	64			19	11	176
Regulations									
P	97	71	36[a]	26			3	2	136
SP[a]	36	14	205	77			24	9	265
RN	9	13	33	49			25	37	67
Facilities									
P	67	69	27[a]	28			3	3	97
SP[a]	26	17	123	80			5	3	154
RN	26	12	94	44			95	44	215
Other Resource Uses									
P	60	91	4[a]	6			2	3	66
SP[a]	84	28	199	67			14	5	297
RN	31	30	42	41			29	28	102
Access									
P[b]	60	90	6	9			1	1	69
SPM	34	29	72	1			12	10	118
RN	56	20	63	23			154	56	273

[a] Semi-primitive nonmotorized (SPNM) and semi-primitive motorized (SPM) were combined into one semi-primitive class (SP).

[b] Primitive (P) and semi-primitive nonmotorized (SPNM) were combined for this characteristic.

more primitive, less developed, and more remote than ROS classification of settings (Table 17). This was particularly true for settings described as semi-primitive and roaded natural, with the majority of these settings classed as RN using ROS.

Classification of recreation settings using ROS is based primarily on the remoteness criterion with adjustments made based on other criteria. This could partly account for differences between user descriptions and ROS classification of settings. Standards used for classification and distinction between ROS classes can be considered the maximum level or limiting point acceptable for a particular class. User descriptions of Steens Mountain settings appear to lie well below these limits and could even suggest adjustment be made in ROS classification of recreation settings in the Steens.

Table 17. Cases where setting recreated in was the same as the preferred recreation setting compared to ROS classification of Steens Mountain Recreation Area settings (Summer 1980).

Setting Description/ Characteristic	ROS Zone[c] SPNM Number	SPNM Percent	SPM Number	SPM Percent	RN Number	RN Percent	Total Respondents
Remoteness							
P	15	37	14	35	11	27	40
SPNM	4	7	7	13	42	79	53
SPM	6	9	2	3	58	88	66
RN	1	11	0	0	8	89	9
Environment							
P	10	31	9	28	13	41	32
SPNM	8	28	6	21	15	52	29
SPM	13	14	11	12	70	74	94
RN	3	5	0	0	54	95	57
Other Users							
P	15	35	13	30	15	35	43
SP[a]	18	13	23	8	112	79	142
RN	1	6	1	6	16	89	18
Regulations							
P	18	20	27	30	45	50	90
SP[a]	18	10	12	6	158	84	188
RN	1	4	3	12	20	83	24
Facilities							
P	15	25	26	44	18	30	59
SP[a]	12	11	11	10	87	79	110
RN	8	9	1	1	81	90	90
Other Resource Uses							
P	15	28	8	15	31	57	54
SP[a]	21	11	21	11	140	77	182
RN	1	4	1	4	26	93	28
Access							
P[b]	20	38	13	25	19	36	52
SPM	13	19	16	24	38	57	67
RN	12	8	5	3	127	88	144

[a] Semi-primitive nonmotorized and semi-primitive motorized were combined into one class.

[b] Primitive and semi-primitive nonmotorized were combined into one class.

[c] There were no settings in the Steens Mountain area classified as providing primitive (P) recreation opportunities.

IV. SUMMARY AND DISCUSSION

The primary objectives of this research were to identify and quantify the recreation experience and setting preferences of users visiting the Steens Mountain Recreation Area and measure and quantify recreation participation in that area. Additionally, several other sub-objectives (refer to Introduction) were developed to provide managers with additional information describing characteristics and preferences of Steens Mountain users.

Summary

Overall Sample Survey

The data collected identifying the demographic characteristics of Steens Mountain Recreation Area users indicate that users' ages are distributed fairly evenly from 26 to 50 years, with a mean for the sample of about 42 years. Males outnumbered females three to one, and 70 percent of the respondents had more than 12 years of formal schooling, the average being 15 years of school. Users' community population size was fairly evenly distributed between less than 5,000 up to 100,000 or more. Almost 30 percent of the sample came from communities of 5,000 to 25,000 people. Forty percent of the sample had incomes from $15,000 to $30,000, with $21,000 to $25,000 the answer given most often (15 percent of the sample).

Most people participated in several different activities during their visit to the study area. When asked to indicate their "most

important," 72 percent of the sample indicated either sightseeing/auto driving, camping, or fishing (lake or stream). Hiking/walking was a most important activity for 6 percent of the sample.

A major focus of this research effort was the quantification of user preferences for each of 35 dimensions (scales) measuring identifiable outcomes. Respondents were asked to indicate whether specific REP items describing each dimension added to or detracted from their satisfaction while engaging in their "most important" activity in the Steens Mountain Recreation Area. Overall, Steens Mountain users perceived that 14 of the REP scales "strongly added" to their recreation experience. The four REP groupings (domains) adding the most to user perceived satisfaction primarily describe nonstressful recreation experiences. The Relationships with Nature domain contained REP scales that added the most to users' experiences followed by scales in the General Learning, Nostalgia, Escape Physical Pressure, and Escape Personal-Social Pressure domains. While means indicate that no REP scale or domain detracted from users' recreation experiences, several scales (Social Recognition, Risk Taking, Avoiding the Unexpected, Meeting New People, and Observing Other People) were all rated neutral, neither adding to nor detracting from user satisfaction.

Respondents' support or opposition to 35 possible management actions for the study area were elicited on a seven point (7 to 1) scale. Users favored providing pamphlets describing the natural history, geologic features, and historic sites of the area and keeping campgrounds rustic. On the average, respondents were netural about 12 of the 35 management actions. Permanently closing the Loop Road from Jackman Park to Blitzen Crossing had the lowest mean.

Recreationists indicated the degree to which 31 environmental features added to or detracted from their recreation experience in the Steens Mountain Recreation Area. Possible responses ranged from 9 (most strongly added) to 1 (most strongly detracted). Scenic vistas, wide panoramas, steep canyons, mule deer, and high mountain lakes strongly added to recreation experiences. Motorized traffic and powerlines nearby ranked the lowest, detracting most from recreation experiences.

Recreationists also responded to five social condition items using the same scale as environmental feature items (most strongly added to most strongly detracted). These items reflected various group sizes and type of users. Seeing only 1-2 other recreation groups in a day added to recreation experiences and seeing more than 6 other groups and seeing recreationists in four-wheel drive vehicles detracted from experiences.

Summary of Activity Group Differences

Four recreation subgroups were identified for further comparative analysis, based on the "most important" activity of the users. These were groups of individuals whose most important activity was: (1) camping; (2) fishing (combined lake and stream); (3) sightseeing/auto driving; or hiking/walking. Student-Newman-Keuls tests ($p \leq .05$) were used to identify significant differences between these groups in their mean response to the items on the questionnaire. Statistically significant differences which characterize the four groups are discussed below.

Camping. Campers accounted for 25 percent of the entire sample. The campers had lower means than some of the other activity groups on several scales in the Achievement domain and on the scales Control Power,

Equipment, Geography, General Learning, and Learn About Nature. Campers did not differ significantly from other groups on proposed management actions. On the environmental and social features, campers for the most part did not differ significantly from the other groups, although they were more in favor of recreation development such as picnic tables than sightseers and hikers.

Fishing. Seventeen percent of the sample indicated that fishing (either lake or stream) was their most important activity. This group had significantly higher means than some other groups on several REP scales, including Competence Testing, Equipment, and Control Power. Fishermen had significantly lower means on management actions placing restrictions of fly fishing only in some lakes and on establishing creek limits. This group rated good stream fishing significantly higher than all other groups and rated scenic vistas and wide panoramas lower than other groups evaluating environmental items. They were similar to other groups in terms of social conditions.

Sightseeing/Auto Driving. Comprising 30 percent of the total sample, sightseers had the least distinctive preferences of the four activity groups. They were similar to one or more other groups for all REP scales. With regard to management actions, however, sightseers had significantly higher means for developing more horseback trails and more mileage signs and viewing areas along the Loop Road than other groups, hikers in particular. For environmental and social items, they differed from other groups only where they had a significantly higher mean for wide panoramas than did hikers.

Hiking/walking. Hikers, which included six percent of the sample and were the most distinctive of the four groups, had significantly higher means than the other activity groups on several REP scales. First, hikers had higher preferences for the scales in the Achievement domain. They also had higher means than some of the groups on Geography, Privacy, General Learning, and Learn About Nature. They had a significantly lower mean than the other groups on Avoiding the Unexpected. Hikers had a significantly higher mean than fishermen for placing creek limits on fishing and a lower mean than sightseers on the management actions developing horseback trails and putting more mileage signs and viewing areas along the Loop Road. Hikers had significantly lower means than all other groups on all environmental feature items relating to recreation development, motorized traffic, and other signs of man such as powerlines, fences, etc. They had a significantly higher mean than some groups on rugged canyonland areas. Hikers also differed significantly from the other three groups on social items, having the lowest means for seeing more than three other recreation groups and seeing recreationists in four-wheel drive vehicles.

Comparison of User Descriptions and Recreation Opportunity Spectrum Setting Classification

A major and somewhat experimental portion of the study dealt with identifying users' descriptions of recreation experiences and settings for comparison with prior classification of those Steens Mountain settings using the Recreation Opportunity Spectrum (ROS).

Given a choice of four experience descriptions representing varying levels of solitude and isolation from the sights and sounds of human activities, most users indicated they experienced moderate amounts of

solitude and isolation, though affiliation with other groupd did occur. When these descriptions were compared with ROS setting classifications, users in the settings classed as providing semi-primitive opportunities indicated higher degrees of solitude and isolation than those in settings providing roaded natural opportunities. Remoteness of a setting, as measured in part by the degree of solitude and isolation found there, was the primary criterion used to classify ROS settings in the Steens Mountain Recreation Area.

Users were also asked to describe their recreation setting and the recreation setting they preferred in terms of characteristics used to zone landscapes using ROS--remoteness, environment, other users, regulations, facilities, other resource uses, and access. When settings recreated in and preferred settings were compared, users describing their settings as primitive also preferred that type of setting, for all characteristics. Those users describing their settings as less primitive tended to prefer setting descriptions that were more primitive than the setting where they were. Only the Access characteristic showed a preference for the chosen setting description--that of automobile access.

User setting descriptions for the seven characteristics were compared to ROS mapped areas of those settings. Users described those settings as more remote and less developed than ROS classification of settings. User descriptions of Steens Mountain settings appear to be more primitive than is indicated by using present ROS classification standards. Based on this finding and consideration of the topography of Steens Mountain, adjustments of the ROS maps of that area seemed necessary. Several areas previously zoned as semi-primitive nonmotorized might be reclassified as providing primitive recreation opportunities. Maps with this adjustment were used in a second phase of this study which is presented in Volume II

of this final report.

Discussion

Several general conclusions can be drawn about Steens Mountain recreationists based on analyses of their preferences for recreation experiences, settings, and management actions.

First, the recreation experience preferences of Steens Mountain users indicate that those users have distinct patterns in their expected and desired outcomes of recreation participation. Within these patterns are identifiable recreation experiences that are strongly influenced by resource management decisions. For example, one conclusion from the REP data is that the Steens Mountain users prefer non-stressful recreation experiences, and those preferences could be reflected in the high percentage of users engaged in "leisurely" activities (sightseeing/auto driving, camping, nature study, photography, etc.). Although these users, for the most part, do not interact with the resource as much as recreationists engaging in more physical activities, several of the REP dimensions (Scenery, General Nature Experience, Privacy, Escape Physical Stresses, and Escape Crowds) valued the most by these users are all dependent on the resource base that is directly controlled by Steens Mountain managers. Since this non-stressful orientation is extremely important to many Steens Mountain users, resource managers should be cognizant of how their decisions could influence this bundle of most highly valued experiences. Awareness by resource managers of the recreation experiences valued (most and least) by users can help managers provide better quality recreation opportunities.

Second, Steens Mountain users engaging in different recreation activities have different preferences for recreation experiences. While Student-Newman-Keuls tests isolated REP differences between the four

of this final report.

Conclusion

Several general conclusions can be drawn about Steens Mountain recreationists based on analyses of their preferences for recreation experiences, settings, and management actions.

First, the recreation experience preferences of Steens Mountain users indicate that there were basic distinct patterns in desired/expected and desired outcomes of recreation participation. Within these patterns are identifiable recreation experiences that are strongly influenced by resource management decisions. For example, one conclusion from the REP data is that the Steens Mountain area offers major non-consumptive recreation experiences, and these preferences could be reflected in the high percentage of users engaged in "leisurely" activities (sightseeing/photo driving, camping, nature study, photography, etc.). Although these users, for the most part, do not interact with the resource as much as recreationists engaging in more physical activities, several of the REP dimensions (Escape, General Nature Experience, Privacy, Escape Routine, Outdoor Learning, and Escape Crowds) valued the most by these users are all dependent on the resource base that is already controlled by Steens Mountain managers. Since this non-consumptive orientation is extremely important to many Steens Mountain users, resource managers should be cognizant of how their decisions could influence this quality of most highly valued experiences. Awareness by resource managers of the recreation experiences valued least and least by users can help managers improve better quality recreation opportunities.

Second, Steens Mountain users engaging in different recreation activities have different preferences for recreation experiences. While Student-Newman-Keuls tests indicate the similarities between the four

activity groups, one finding was evident. The largest and most consistent differences occurred between recreationists in activity groups "actively" using the Steens Mountain resource (fishermen and hikers, especially), and those users in activity groups "passively" observing or using the resource (sightseers and campers). Although not apparent in all REP differences, this finding is supported by a few key REP differences. Those users in the active group preferred the active and self-motivating dimensions (Exercise-Physical Fitness and Competence Testing) more than members of the more passive group.

Third, Steens Mountain recreationists prefer resource management strategies that preserve the relative primitive and undeveloped nature of the area. This is reflected in their preferences for keeping campgrounds rustic and disapproval of paving the Loop Road or increasing recreation development. This was also reflected in negative feelings toward seeing large numbers of other recreation users. Along with the lack of further development, however, recreationists are not in favor of actions restricting present access by automobile to the area. Closing even a portion of the Loop Road met with disapproval. A desire for minimal recreation development and the importance of the natural scenic value of this area are also reflected by users describing and preferring the recreation settings as relatively primitive and undeveloped, more so than as zoned using ROS. As stated previously, managers have much control over the types of recreation settings available and thus the opportunities for recreation experiences provided to area users.

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Appendix A

STEENS MOUNTAIN QUESTIONNAIRES

(Summer 1980)

STEENS MOUNTAIN
USE QUESTIONNAIRE

Interviewer: _____

Station (circle) North Loop (01)
South Loop (02)
Alvord (03)

Time of week (circle) Weekday Weekend Holiday Weekends (04)

Date (Mo/Day): _____

Total number of hours spent in area: _____ (06-08)

Other areas visited on present trip (check)
___ Round Barn (09)
___ Malheur Wildlife Refuge (10)
___ Diamond Craters (11)
___ Alvord Desert (12)

What was the primary destination point of this trip?

1. Steens
2. Malheur
3. Other (Fill in) _____

What activities were participated in and where did they occur?

ACTIVITY	ZONES	ACTIVITY	ZONES
1. CAMPING NEAR AUTO	(14) (15) (16) (17)	10. TECHNICAL MT. CLIMBING	(50) (51) (52) (53)
2. CAMPING AWAY FROM AUTO	(18) (19) (20) (21)	11. HORSEBACK RIDING	(54) (55) (56) (57)
3. FISHING (LAKE)	(22) (23) (24) (25)	12. BIG GAME HUNTING	(58) (59) (60) (61)
4. PICNICKING	(26) (27) (28) (29)	13. SMALL GAME HUNTING	(62) (63) (64) (65)
5. AUTO DRIVING	(30) (31) (32) (33)	14. NATURE STUDY	(66) (67) (68) (69)
6. 4-WHEEL DRIVING	(34) (35) (36) (37)	15. PHOTOGRAPHY	(70) (71) (72) (73)
7. MOTORCYCLING	(38) (39) (40) (41)	16. VISITING HISTORICAL STRUCTURES	(74) (75) (76) (77) 78-80 ID#
8. FISHING (STREAM)	(42) (43) (44) (45)		
9. HIKING/WALKING	(46) (47) (48) (49)		

Specific historical structures visited (fill in) _____

Which of the above activities was the most important in coming to this area?
_____ (1-2) C2

Previous visits in the past year? (1979 ONLY)
#_____ (3-4)

If zero, have you ever been here before? (1) Yes (2) No (05)

# of people in group: #_____ (6-7)

# of people in vehicle: #_____ (8-9)

Group Type: (1) Family (2) Friends (3) Family & Friends (4) Alone (10)

dress of Permanent Residence:

Name _____

Address _____

City, State _____ Zip _____ (11-15)
78-80 ID#

Figure A-1. Front-End Interview Form.

Department of Resource Recreation Management

Oregon State University

Corvallis, Oregon 97331 (503) 754-2043

Dear Steens Mountain User:

We appreciate the help you gave us last summer with our recreation use survey of the Steens Mountain Recreation Lands. To learn more about recreational use of the Steens, we need your help again.

Would you please complete the enclosed questionnaire? It was designed to learn more about preferences of the users of the Steens. The information is being collected to help guide future management decisions.

A relatively small group of people has been selected for this questionnaire, so your response is quite important to us. Please complete the questionnaire as soon as convenient, fold it, and mail it back in the postage-paid envelope provided. Your answers will be kept confidential. Thank you in advance for your help.

Sincerely,

Perry J. Brown

Perry J. Brown
Professor and Head

PJB:ar
Encls.

igure A-2. Mail Questionnaire.

PART I

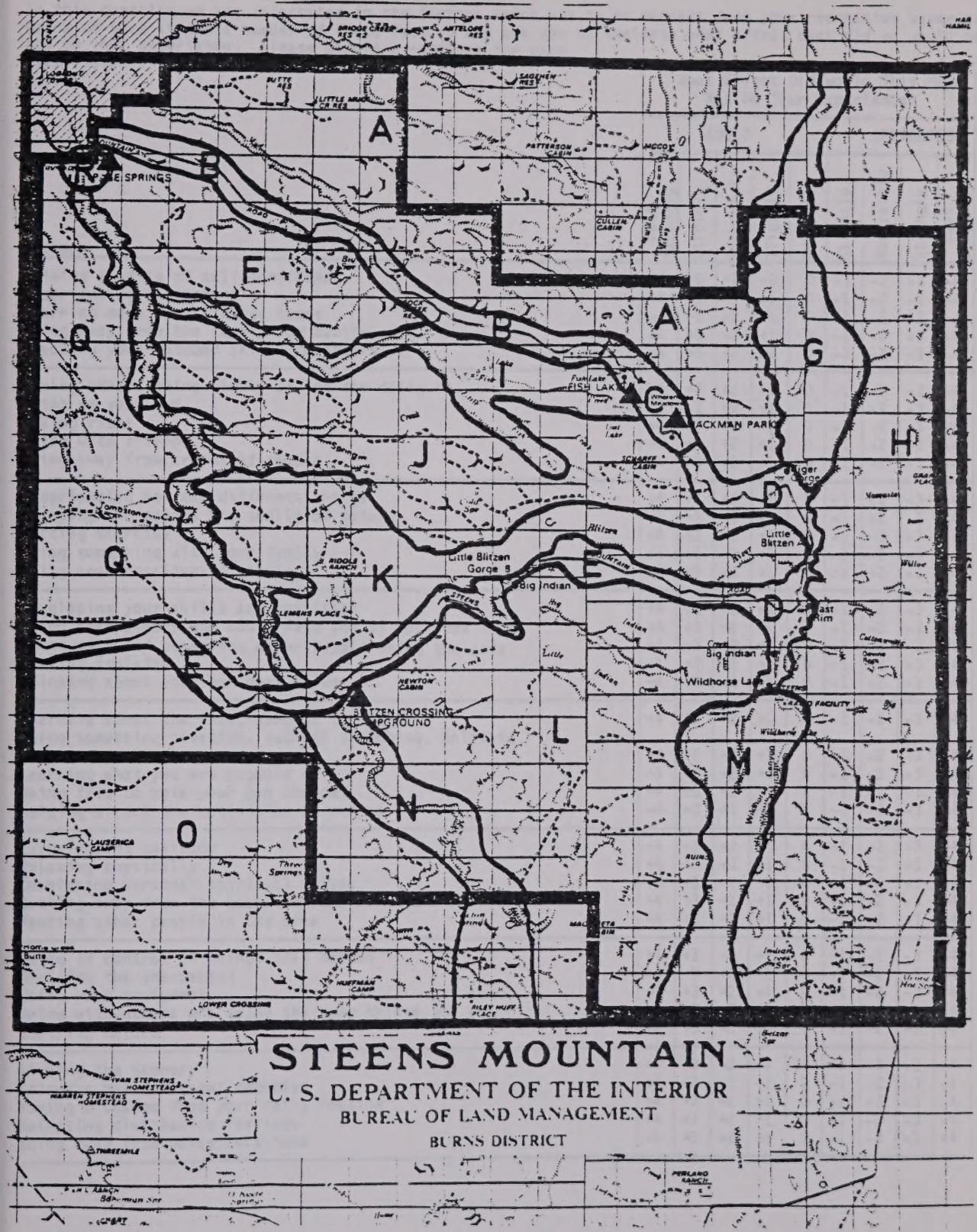
This set of questions asks about the details of your trip to Steens Mountain during which we interviewed you. You indicated that the activity most important to you in coming to Steens was _____. You also indicated that you participated in that activity in zone(s) _____ shown on the attached Steens Mountain map. We would like to learn more about your recreation experience in that area.

Think about one specific area where you engaged in _____. Indicate the location of this area on the attached map. Place an X on the map at the area you are thinking about.

In Part I of the questionnaire we are interested in learning about the experiences you had at the area you are thinking about. Be sure when answering the following questions that you keep that area and activity in mind.

In this question we are interested in the environment where you recreated. We have listed below a number of features of the environment and ask you to indicate what effect each did or would have had on your experience. Please write a response for each item listed.

	What Effect Did/Would This Have Had on Your Experience?								
	ADDED					DETRACTED			
Features of the Environment	Most Strongly	Strongly	Moderately	Slightly	Neutral	Slightly	Moderately	Strongly	Most Strongly
Mule deer	+4	+3	+2	+1	0	-1	-2	-3	-4
Steep, rugged hillsides	+4	+3	+2	+1	0	-1	-2	-3	-4
Rugged canyonland areas	+4	+3	+2	+1	0	-1	-2	-3	-4
Good stream fishing	+4	+3	+2	+1	0	-1	-2	-3	-4
High mountain lakes	+4	+3	+2	+1	0	-1	-2	-3	-4
Wide panoramas	+4	+3	+2	+1	0	-1	-2	-3	-4
Sparse vegetation	+4	+3	+2	+1	0	-1	-2	-3	-4
Scenic vistas	+4	+3	+2	+1	0	-1	-2	-3	-4
Wild horses	+4	+3	+2	+1	0	-1	-2	-3	-4
Coyotes in the distance	+4	+3	+2	+1	0	-1	-2	-3	-4
Only 1-2 other recreation groups encountered on a given day	+4	+3	+2	+1	0	-1	-2	-3	-4
3-6 other recreation groups encountered on a given day	+4	+3	+2	+1	0	-1	-2	-3	-4
6-15 other recreation groups encountered on a given day	+4	+3	+2	+1	0	-1	-2	-3	-4
More than 15 other recreation groups encountered per day	+4	+3	+2	+1	0	-1	-2	-3	-4
Other recreationists in four wheel drive vehicles	+4	+3	+2	+1	0	-1	-2	-3	-4
Developed campgrounds	+4	+3	+2	+1	0	-1	-2	-3	-4
Outhouse-type toilets	+4	+3	+2	+1	0	-1	-2	-3	-4
Picnic tables	+4	+3	+2	+1	0	-1	-2	-3	-4
Designated fire pits	+4	+3	+2	+1	0	-1	-2	-3	-4
No evidence of recreation management in the area	+4	+3	+2	+1	0	-1	-2	-3	-4
Well maintained hiking trails	+4	+3	+2	+1	0	-1	-2	-3	-4
Maps of the area	+4	+3	+2	+1	0	-1	-2	-3	-4
Rough roads on which only four wheel drive vehicles can travel	+4	+3	+2	+1	0	-1	-2	-3	-4
Infrequently used dirt roads	+4	+3	+2	+1	0	-1	-2	-3	-4
Dirt roads on which traffic is frequent	+4	+3	+2	+1	0	-1	-2	-3	-4
Motorized traffic nearby	+4	+3	+2	+1	0	-1	-2	-3	-4
Motorized traffic in distance	+4	+3	+2	+1	0	-1	-2	-3	-4
No motorized traffic apparent	+4	+3	+2	+1	0	-1	-2	-3	-4
Cattle grazing	+4	+3	+2	+1	0	-1	-2	-3	-4
Evidence that cattle had been in the area	+4	+3	+2	+1	0	-1	-2	-3	-4
Small man-built reservoirs in the area	+4	+3	+2	+1	0	-1	-2	-3	-4
Power lines in the area	+4	+3	+2	+1	0	-1	-2	-3	-4
Fences	+4	+3	+2	+1	0	-1	-2	-3	-4
No evidence of man	+4	+3	+2	+1	0	-1	-2	-3	-4
Abandoned mines	+4	+3	+2	+1	0	-1	-2	-3	-4
Abandoned buildings	+4	+3	+2	+1	0	-1	-2	-3	-4


STEENS MOUNTAIN
U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BURNS DISTRICT
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
Little Blitzen Gorge
Big Indian
Little Blitzen
Wildhorse Lake
BLITZEN CROSSING CAMPGROUND
LOWER CROSSING
FISH LAKE
JACKMAN PARK

In this question we are interested in the factors which add to or detract from your recreation experience. Below we have listed a number of these factors and ask you to indicate what effect each did or would have had on your experience. Please circle a response for each item listed.

Factors	What Effect Did/Would This Have Had On Your Experience?								
	ADDED					DETRACTED			
	Most Strongly	Strongly	Moderately	Slightly	Neutral	Slightly	Moderately	Strongly	Most Strongly
Gaining a sense of self-confidence	+4	+3	+2	+1	0	-1	-2	-3	-4
Experiencing excitement	+4	+3	+2	+1	0	-1	-2	-3	-4
Learning more about things there	+4	+3	+2	+1	0	-1	-2	-3	-4
Being away from the family for awhile	+4	+3	+2	+1	0	-1	-2	-3	-4
Teaching your outdoor skills to others	+4	+3	+2	+1	0	-1	-2	-3	-4
Having others think highly of you for doing it	+4	+3	+2	+1	0	-1	-2	-3	-4
Being on your own	+4	+3	+2	+1	0	-1	-2	-3	-4
Taking risks	+4	+3	+2	+1	0	-1	-2	-3	-4
Being with friends	+4	+3	+2	+1	0	-1	-2	-3	-4
Being away from crowds of people	+4	+3	+2	+1	0	-1	-2	-3	-4
Experiencing new and different things	+4	+3	+2	+1	0	-1	-2	-3	-4
Enjoying the sounds and smells of nature	+4	+3	+2	+1	0	-1	-2	-3	-4
Getting exercise	+4	+3	+2	+1	0	-1	-2	-3	-4
Doing something with your family	+4	+3	+2	+1	0	-1	-2	-3	-4
Being near considerate people	+4	+3	+2	+1	0	-1	-2	-3	-4
Developing your skills and abilities	+4	+3	+2	+1	0	-1	-2	-3	-4
Being near others who could help you if you need them	+4	+3	+2	+1	0	-1	-2	-3	-4
Being with and observing other people using the area	+4	+3	+2	+1	0	-1	-2	-3	-4
Feeling isolated	+4	+3	+2	+1	0	-1	-2	-3	-4
Thinking about your personal values	+4	+3	+2	+1	0	-1	-2	-3	-4
Learning about the topography of the land	+4	+3	+2	+1	0	-1	-2	-3	-4
Doing something creative, such as sketching, painting, photography, etc.	+4	+3	+2	+1	0	-1	-2	-3	-4
Learning what you are capable of	+4	+3	+2	+1	0	-1	-2	-3	-4
Being free to make your own choices	+4	+3	+2	+1	0	-1	-2	-3	-4
Helping direct the activities of others	+4	+3	+2	+1	0	-1	-2	-3	-4
Experiencing solitude	+4	+3	+2	+1	0	-1	-2	-3	-4
Relaxing physically	+4	+3	+2	+1	0	-1	-2	-3	-4
Developing personal spiritual values	+4	+3	+2	+1	0	-1	-2	-3	-4
Getting away from the usual demands of life	+4	+3	+2	+1	0	-1	-2	-3	-4
Meeting other people in the area	+4	+3	+2	+1	0	-1	-2	-3	-4
Being in control of things that happen	+4	+3	+2	+1	0	-1	-2	-3	-4
Avoiding the unexpected	+4	+3	+2	+1	0	-1	-2	-3	-4
Using your equipment	+4	+3	+2	+1	0	-1	-2	-3	-4
Being with others who enjoy the same things you do	+4	+3	+2	+1	0	-1	-2	-3	-4
Studying nature	+4	+3	+2	+1	0	-1	-2	-3	-4
Viewing the scenery	+4	+3	+2	+1	0	-1	-2	-3	-4
Bringing back pleasant memories	+4	+3	+2	+1	0	-1	-2	-3	-4
Having a change from your daily routine	+4	+3	+2	+1	0	-1	-2	-3	-4
Releasing clutched-up feelings	+4	+3	+2	+1	0	-1	-2	-3	-4
Being away from noise back home	+4	+3	+2	+1	0	-1	-2	-3	-4

3. A wide variety of recreation settings can be provided by resource managers. Below, in the columns, are four different settings which are described by seven different characteristics. For each characteristic (e.g. remoteness) select a setting which is most descriptive of where you recreated and a setting which is most descriptive of conditions you would prefer for your most important activity at the Steens. In the two right columns circle the numbers which represent this actual and this preferred setting. Your actual and preferred settings can be the same or they can be different.

CHARACTERISTICS	SETTING 1	SETTING 2	SETTING 3	SETTING 4	IN WHICH TYPE SETTING DID YOU RECREATE? (Circle)	WHICH TYPE SETTING DO YOU PREFER? (Circle)
Remoteness	Most man-made developments, including motorized vehicles, cannot be seen or heard.	Most man-made developments, including motorized vehicles, can seldom be seen or heard.	Few, but some man-made developments, including motorized vehicles, can be seen and heard.	Man-made developments, including motorized vehicles, are common.	1 2 3 4	1 2 3 4
Environment	Unmodified natural environment.	Predominately unmodified natural environment, except for minimal facilities like trails.	Predominately unmodified natural environment, except for minimal facilities like trails and rough roads.	Generally natural appearing environment, with developed (e.g. camping) recreation facilities.	1 2 3 4	1 2 3 4
Other Users	Very few other users or their evidence; very low concentration of use.	Some, but only a few, other users or their evidence; low concentration of use.	Same as Setting 2.	Other users or their evidence are quite noticeable; moderate concentration of use.	1 2-3 4	1 2-3 4
Regulations	No apparent on-site regulation of users.	Few, but some, on-site regulation of users by rules and managers.	Same as Setting 2.	Obvious on-site regulation of users by rules and managers.	1 2-3 4	1 2-3 4
Facilities	No recreation facilities are provided.	A few minimal facilities like trails are provided.	Same as Setting 2.	Recreation facilities like trails, campgrounds, etc., are provided.	1 2-3 4	1 2-3 4
Other Resource Uses	Non-recreational resource uses which alter the natural environment do not occur.	Some non-recreational resources uses which alter the natural environment occur (e.g. grazing).	Same as Setting 2.	Non-recreational resource uses which alter the natural environment (e.g. water developments, grazing, etc.) are quite evident.	1 2-3 4	1 2-3 4
Access	No motorized access.	Same as Setting 1.	Four-wheel drive, off road motorcycle, and possible truck access.	Automobile access.	1-2 3 4	1-2 3 4

4. As a final question in PART I we would like you to indicate which of the following descriptions best indicates the type of experience you had at the area of the Steens you are thinking about (check only one).

_____ An experience characterized by a high degree of solitude and isolation from the sights and sounds of human activity.

_____ An experience characterized by a moderate degree of solitude and isolation from the sights and sounds of human activity.

_____ An experience in which there was some opportunity for solitude but affiliation with other user groups occurred a good part of the time.

_____ An experience in which affiliation with other user groups was quite common and the opportunity for solitude was low.

PART 2

1. Listed below are a few management actions which could be taken in the Steens Mountain Recreation Lands but are not actually planned. We are interested in the effect these actions would have on a recreation experience similar to the one you had when we interviewed you. Please circle the response which best describes the effect you think the action would have.

	EFFECT ON EXPERIENCE						
	ADDED						DETRACTED
Action	Highly Desirable	Moderately Desirable	Slightly Desirable	No Effect On My Experience	Slightly Undesirable	Moderately Undesirable	Highly Undesirable
Make available pamphlets describing the natural and geologic features of the area	+3	+2	+1	0	-1	-2	-3
Make more pull-off areas along the Loop Road with picnic tables and fire grills	+3	+2	+1	0	-1	-2	-3
Construct more short day use hiking trails	+3	+2	+1	0	-1	-2	-3
Pave Loop Road	+3	+2	+1	0	-1	-2	-3
Develop more trails for horse riding	+3	+2	+1	0	-1	-2	-3
Construct more campgrounds along Loop Road (the road which leads to the Rim area)	+3	+2	+1	0	-1	-2	-3
Provide more directional signs on Loop Road	+3	+2	+1	0	-1	-2	-3
Place more mileage signs on Loop Road	+3	+2	+1	0	-1	-2	-3
Limit vehicles to certain areas only	+3	+2	+1	0	-1	-2	-3
Place more trash cans along Loop Road	+3	+2	+1	0	-1	-2	-3
Require pets be kept on a leash in campgrounds	+3	+2	+1	0	-1	-2	-3
Limit length of stay at campgrounds to five days	+3	+2	+1	0	-1	-2	-3
Require a fee at all campgrounds	+3	+2	+1	0	-1	-2	-3
Improve campgrounds to have more facilities (such as running water, flush toilets, etc.)	+3	+2	+1	0	-1	-2	-3
Keep campgrounds as rustic as possible with few facilities	+3	+2	+1	0	-1	-2	-3
Keep Loop Road open through the winter	+3	+2	+1	0	-1	-2	-3
Make information available on where camping and picnic facilities are located in the Steens	+3	+2	+1	0	-1	-2	-3
Distribute information packets describing locations of good fishing	+3	+2	+1	0	-1	-2	-3
Distribute detailed Steens maps	+3	+2	+1	0	-1	-2	-3
Distribute maps showing campsites in the area according to how heavily they are used	+3	+2	+1	0	-1	-2	-3
Provide a pamphlet describing the natural history, flora, and geology of the area	+3	+2	+1	0	-1	-2	-3
Provide a pamphlet of locations of historic sites in the area	+3	+2	+1	0	-1	-2	-3
Develop rustic shelters for winter recreation	+3	+2	+1	0	-1	-2	-3
Develop a visitor center near Frenchglen	+3	+2	+1	0	-1	-2	-3
Construct more viewing areas along Loop Road	+3	+2	+1	0	-1	-2	-3
Keep Loop Road open to Fish Lake in the winter	+3	+2	+1	0	-1	-2	-3
Permanently close Loop Road from Jackman Park to near Blitzen Crossing	+3	+2	+1	0	-1	-2	-3
Provide a pamphlet which describes the pioneer history of the area	+3	+2	+1	0	-1	-2	-3
Make available a short pamphlet describing the history of Indian occupation in the Steens	+3	+2	+1	0	-1	-2	-3
Adopt regulations which restrict some lakes and streams to fly fishing only	+3	+2	+1	0	-1	-2	-3
Place special creel limits which reduce the number of fish to be taken in the Steens	+3	+2	+1	0	-1	-2	-3
Place signs along Loop Road which point out locations of historic interest	+3	+2	+1	0	-1	-2	-3
Develop long distance backpacking trails	+3	+2	+1	0	-1	-2	-3
Have more rangers for law enforcement	+3	+2	+1	0	-1	-2	-3

PART 3

Thinking back to your visit to Steens Mountain on which you were first contacted by us, please answer the following questions about that trip.

1. What type of vehicle(s) did you drive to Steens Mountain?

___ car, full size

___ car, compact, subcompact, or small truck

___ standard-sized pickup truck (without camper)

___ motor home, car with camper, or pickup with camper

___ other; specify: _____

2. How many miles did you travel, one-way to Steens Mountain? _____ miles.

3. During your stay at Steens Mountain (see previous map) how many miles, if any, did you or your party drive after you arrived? _____ miles.

4. While at Steens Mountain, what vehicle(s), if any, other than those mentioned in Question # 1 did you or your party drive?

___ 4-wheel drive vehicle

___ motorcycle

___ drove the same vehicle as mentioned in Question # 1

___ other; please specify: _____

5. For each of the following categories, please indicate your party's approximate expenditures on items used while traveling to Steens Mountain and then back home again. (Expenditures on items used at Steens Mountain should be reported in Question 8.)

a. Food and refreshments _____

b. Motel, lodging, campground and trailer fees _____

c. Other expenses incurred while traveling (not counting vehicle expenses) _____

6. How much did it cost you and your party for vehicle expenses (gasoline, etc.) to travel to and from Steens Mountain?

_____

7. For each of the following categories, please indicate your approximate expenditures on items used while at Steens Mountain.

a. Food and refreshments _____

b. Hotels, camping, and/or trailer fees _____

c. Other expenses incurred at Steens Mountain, such as purchases at Frenchglen for fishing tackle or postcards _____

8. Recall the expenses you listed above. In the following questions you are asked whether you believe you got your money's worth.

a. How much did you value this trip? Was it worth more money than you actually spent?

____ Yes. If so, go on to b. _____ No.

b. If Yes, about how much was the entire trip worth? Assume that this trip had been more expensive due perhaps to increased travel costs or lodging, etc., what is the maximum amount you would have paid in addition to your current trip costs to visit Steens Mountain? $ _____.

9. Suppose you could not visit Steens Mountain. What would have been your next best alternative activity, where would you have gone, and how far would you have traveled?

_____ (Activity) _____ (Location) _____ (Distance-Miles)

10. Given your activities on Steens Mountain, which of the following descriptions best indicates your preference for access conditions which might be provided? (check only one)

___ No motorized access

___ Rough roads accessible by 4-wheelers and off-road motor vehicles

___ Roads accessible by trucks and cars but not trailers

___ Graveled roads passable by most vehicles and trailers

___ Hard surfaced roads passable by any vehicle

11. Given your activities on Steens Mountain, which of the following descriptions best indicates your preference for recreation facilities? (check only one)

___ Primitive with no facilities

___ A few rustic facilities provided

___ Moderate facility development with some surfaced roads

___ Considerable facility development with surfaced roads and trails

___ Considerable facility development with many conveniences including showers and electrical hook ups

---

PART 4

Please answer these few remaining questions. Your privacy will be maintained.

1. Please enter the zip code of your home residence ___ ___ ___ ___ ___

2. Your sex? ___Female ___Male

3. Your age at your last birthday? _____ years

4. Population of community where you now live?

_____ 100,000 or more

_____ 25,000 - 100,000

_____ 5,000 - 25,000

_____ below 5,000

_____ farm (no community)

5. What is the highest year of formal schooling you have completed? (circle the year)

Elementary School	1	2	3	4	5	6	7	8
High School/Vocational School	9	10	11	12				
College or Technical School	13	14	15	16				
Graduate School	17	18	19	20	21	22		

6. To the best of your knowledge, what was your household income last year (before taxes)?

___ Under $3,000
___ $3,000 - $4,999
___ $5,000 - $7,999
___ $8,000 - $11,999
___ $12,000 - $14,999
___ $15,000 - $17,999
___ $18,000 - $20,999
___ $21,000 - $24,999
___ $25,000 - $29,999
___ $30,000 - $34,999
___ $35,000 - $39,999
___ $40,000 - $49,999
___ $50,000 - $74,999
___ $75,000 - $100,000
___ Over $100,000 (Please specify to nearest $100,000)
$_____

Table A-1. Recreation experience preference domains, scales (designated by numbers), and items (designated by lower case letters) used in the Steens Mountain Recreation Area Study (Summer 1980)

Domain A. Achievement

1. Reinforcing Self-Image
   a. Gaining a sense of self-confidence
   b. Learning what you are capable of
2. Social Recognition
   a. Having others think highly of you for doing it
3. Competence Testing
   a. Developing your skills and abilities
4. Seeking Stimulation
   a. Experiencing excitement

Domain B: Leadership/Autonomy

1. Independence/Autonomy
   a. Being on your own
   b. Being free to make your own choices
2. Control Power
   a. Being in control of things that happen
3. Teaching-Sharing Skills
   a. Teaching your outdoor skills to others
4. Leading Others
   a. Helping direct the activities of others

Domain C: Risk Taking

1. Risk Taking
   a. Taking risks
2. Avoiding Unexpected
   a. Avoiding the unexpected

Domain D: Equipment

1. Equipment
   a. Using my equipment

Domain E: Family Togetherness

1. Family Togetherness
    a. Doing something with your family

Domain F: Being With People

1. Being With Friends
    a. Being with friends
2. Being With Similar People
    a. Being with others who enjoy the same thing you do

Domain G: Meeting-Observing New People

1. Meeting New People
    a. Meeting other people in the area
2. Observing Other People
    a. Being with and observing other people using the area

Domain H: General Learning

1. General Learning
    a. Learning more about things there
2. Exploration
    a. Experiencing new and different things

Domain I: Relationships With Nature

1. Scenery
    a. Viewing the scenery
2. General Nature Experience
    a. Enjoying sounds and smells of nature
3. Learn About Nature
    a. Studying nature

Domain J: Reflect on Personal Values

1. Spiritual
    a. Develop personal spiritual values
2. Introspection
    a. Thinking about your personal values

Domain K: Creativity

1. Creativity
    a. Doing something creative, such as sketching, painting, photography, etc.

Domain L: Nostalgia

1. Nostalgia
    a. Bringing back pleasant memories

Domain M: Exercise/Physical Fitness

1. Exercise/Physical Fitness
    a. Getting exercise

Domain N: Physical Rest

1. Physical Rest
    a. Relaxing physically

Domain O: Escape Personal-Social Pressure

1. Tension Release
    a. Releasing clutched-up feelings
2. Escape Daily Routine
    a. Having a change from your daily routine
    b. Getting away from usual demands of life

Domain P: Escape Physical Pressure

1. Privacy
    a. Experiencing solitude
    b. Feeling isolated
2. Escape Crowds
    a. Being away from crowds of people
3. Escape Physical Stresses
    a. Being away from noise back home

Domain Q: Security

1. Security
    a. Being near considerate people
    b. Being near others who could help if you need them

Domain R: Escaping Family

1. Escaping Family

   a. Being away from the family for awhile

Geography Domain

   a. Learning about the topography of the land

Appendix B

RECREATION EXPERIENCE PREFERENCES

Table B-1. Recreation experience domain (D), scale (S), and item (I) means for respondents sampled in the Steens Mountain Recreation Area (Summer 1980). ←

Recreation Experience Preferences Domain Scale Item	Mean[a] D	Mean[a] S	Mean[a] I	S.D.[b]	N	Alpha[c]	Inter-Item Correlation[d] r	Inter-Item Correlation[d] $\bar{r}$
1. Achievement	6.6			1.1	446	.78		.42
Reinforcing Self-Image		6.6		1.4	452			
Gaining a sense of self-confidence			6.6	1.5	458			
Learning what you are capable of			6.5	1.6	458			
Social Recognition		5.5		1.4	459			
Having others think highly of you for doing it			5.5	1.4	459			
Competence testing		7.0		1.6	461			
Developing your skills and abilities			7.0	1.6	461			
Seeking Stimulation		7.4		1.4	466			
Experiencing excitement			7.4	1.4	466			
2. Leadership/Autonomy	6.5			1.1	445	.68		.30
Independence/Autonomy		7.2		1.4	457			
Being on your own			6.9	1.6	462			
Being free to make your own choices			7.4	1.5	464			
Control Power		6.6		1.6	460			
Being in control of things that happen			6.6	1.6	460			
Teaching/Sharing Skills		6.3		1.6	457			
Teaching your outdoor skills to others			6.3	1.6	457			
Leading Others		5.2		1.6	455			
Helping direct activities of others			5.2	1.6	455			
3. Risk Taking	5.5			1.2	447	.31		-.14
Risk Taking		5.5		1.9	459			
Taking risks			5.5	1.9	452			
Avoiding Unexpected		5.4		1.6	451			
Avoiding the unexpected			5.4	1.6	451			
4. Equipment	6.9			1.5	463			
Equipment		6.9		1.5	463			
Using my equipment			6.9	1.5	463			
5. Family Togetherness	7.6			1.6	471			
Family Togetherness		7.6		1.6	471			
Doing something with your family			7.6	1.6	471			
6. Being With People	7.5			1.3	465	.65	.48	
Being With Friends		7.5		1.4	469			
Being with friends			7.5	1.4	469			
7. Meeting-Observing New People	5.2			1.8	455	.79	.65	
Meeting New People		5.3		2.0	462			
Meeting other people in the area			5.3	2.0	462			
Observing Other People		5.0		2.0	462			
Being with and observing other people using the area			5.0	2.0	462			
8. General Learning	8.0			1.2	467	.73	.57	
General Learning		7.9		1.2	475			
Learning more about things there			7.9	1.2	475			
Exploration		8.1		1.2	472			
Experiencing new and different things			8.1	1.2	472			
9. Relationships With Nature	8.3			.8	466	.71		.47
Scenery		8.5		.8	479			
Viewing the scenery			8.5	.8	479			
General Nature Experience		8.4		1.0	473			
Enjoying sounds and smells of nature			8.4	1.0	473			
Learn About Nature		7.9		1.2	469			
Study nature			7.9	1.2	469			

Table B-1 Continued.

Recreation Experience Preferences Domain Scale Item	Mean[a] D	Mean[a] S	Mean[a] I	S.D.[b]	N	Alpha[c]	Inter-Item Correlation[d] r	Inter-Item Correlation[d] $\bar{r}$
10. Reflect On Personal Values	6.8			1.4	458	.64	.47	
Spiritual		6.8		1.7	462			
Develop personal spiritual values			6.8	1.7	462			
Introspection		6.9		1.6	465			
Thinking about your personal values			6.9	1.6	465			
11. Creativity	6.9			1.7	462			
Creativity		6.9		1.7	462			
Doing something creative, such as sketching, painting, photography			6.9	1.7	462			
12. Nostalgia	8.1			1.2	470			
Nostalgia		8.1		1.2	470			
Bringing back pleasant memories			8.1	1.2	470			
13. Exercise/Physical Fitness	7.8			1.3	473			
Exercise/Physical Fitness		7.8		1.3	473			
Getting exercise			7.8	1.3	473			
14. Physical Rest	7.7			1.3	473			
Physical Rest		7.7		1.3	473			
Relaxing physically			7.7	1.3	473			
15. Escape Personal-Social Pressure	7.8			1.1	455	.72	.50	
Tension Release		7.0			460			
Releasing clutched-up feelings			7.0	1.6	460			
Escape Daily Routine		8.2		1.0	470			
Having a change from daily routine			8.2	1.0	474			
Getting away from usual demands of life			8.1	1.1	474			
16. Escape Physical Pressure	7.9			1.0	458	.72		.42
Privacy		7.6		1.3	462			
Experiencing solitude			7.9	1.3	470			
Feeling isolated			7.3	1.6	466			
Escape Crowds		8.4		1.0	480			
Being away from crowds of people			8.4	1.0	480			
Escape Physical Stresses		7.7		1.5	470			
Being away from noise back home			7.7	1.5	470			
17. Security	6.7			1.5	453			
Security		6.7		1.5	453			
Being near considerate people			7.2	1.8	458			
Being near others who could help if you need them			6.2	1.7	460			
18. Escaping Family	5.7			1.9	454			
Escaping Family		5.7		1.9	454			
Being away from the family for awhile			5.7	1.9	454			
19. Geography Domain	7.7			1.3	469			
Learning about the topography of land			7.7	1.3	469			

[a]Means are based on responses to a nine-point response format ranging from 9 (most strongly added) to 1 (most strongly detracted).

[b]Standard deviations for multiple-item scales are computed by averaging the standard deviations of the items within that scale. Standard deviations for multiple-scale domains are computed by averaging the standard deviations of the scales within that domain.

[c] Alpha reliability for domains consisting of more than one scale using the Cronbach alpha computation for internal consistency.

[d]For scales and domains consisting of only two items, "r", or the correlation between the two items is reported here. The average inter-item correlation, "$\bar{r}$", is reported for scales and domains consisting of three or more items.

Appendix C

MANAGEMENT ACTION PREFERENCES

Table C-1. Management item means and standard deviations for respondents sampled in the Steens Mountain Recreation Area, grouped by their most important activity (Summer 1980).

Possible Management Actions	Most Important Activity Groups							
	Camping (N=117)[a]		Fishing (N=73)[a]		Sightseeing (N=134)[a]		Hiking (N=25)[a]	
	Mean[b]	S.D.[c]	Mean[b]	S.D.[c]	Mean[b]	S.D.[c]	Mean[b]	S.D.[c]
Make available pamphlets describing the natural and geologic features of the area	6.0	1.4	5.7	1.5	6.0	1.4	6.0	1.3
Make more pull off areas along the Loop Road with picnic tables and fire grills	3.4	1.9	3.7	1.8	3.5	1.9	3.0	1.7
Construct more short day use hiking trails	4.2	1.7	4.1	1.6	4.5	1.8	4.1	1.9
Pave Loop Road	2.3	1.8	2.3	1.9	2.7	2.1	2.0	1.6
Develop more trails for horse riding	3.4	1.5	3.1	1.6	3.6	1.5	2.6	1.7
Construct more campgrounds along Loop Road	3.4	2.0	3.4	1.9	3.0	1.8	2.4	1.7
Provide more directional signs on Loop Road	4.0	1.8	4.2	1.6	4.4	1.7	3.4	1.5
Place more mileage signs on Loop Road	3.8	1.7	4.0	1.5	4.0	1.6	3.4	1.6
Limit vehicles to certain areas only	5.1	1.9	4.9	2.0	5.2	1.9	6.0	1.6
Place more trash cans along Loop Road	4.4	1.6	4.7	1.6	4.3	1.7	4.2	1.9
Require pets be kept on a leash in campgrounds	5.1	2.0	4.8	2.0	5.1	2.0	5.0	1.7
Limit length of stay at campgrounds to five days	4.1	1.9	3.6	1.9	4.1	2.0	4.7	1.9
Require a fee at all campgrounds	3.1	1.9	2.8	1.7	3.5	1.8	3.6	2.0
Improve campgrounds to have more facilities (such as running water, flush toilets, etc)	2.9	1.8	3.3	2.0	3.1	1.8	3.0	1.7
Keep campgrounds as rustic as possible with few facilities	5.8	1.5	5.7	1.7	5.9	1.5	6.3	1.2
Keep Loop Road open through the winter	3.1	1.9	3.3	1.8	2.9	1.8	3.0	2.2
Make information available on where camping and picnic facilities are located in the Steens	4.7	1.7	5.0	1.7	5.2	1.6	4.8	1.7
Distribute information packets describing locations of good fishing	3.6	1.9	3.8	2.1	4.0	1.9	3.8	1.6
Distribute detailed Steens maps	5.0	1.9	5.3	1.6	5.4	1.8	5.3	1.3
Distribute maps showing campsites in the area according to how heavily they are used	4.7	1.7	4.9	1.6	4.9	1.7	4.7	1.7
Provide a pamphlet describing the natural history, flora, and geology of the area	5.9	1.4	5.8	1.4	5.9	1.6	6.1	1.0
Provide a pamphlet of locations of historic sites in the area	5.8	1.4	5.7	1.4	5.9	1.5	5.8	1.4
Develop rustic shelters for winter recreation	4.2	1.8	3.8	1.8	3.8	1.8	4.5	1.7
Develop a visitor center near Frenchglen	4.1	1.8	4.1	1.6	4.5	1.9	4.1	1.6

Table C-1 Continued.

Possible Management Actions	Most Important Activity Groups							
	Camping (N=117)[a]		Fishing (N=73)[a]		Sightseeing (N=134)[a]		Hiking (N=25)[a]	
	Mean[b]	S.D.[c]	Mean[b]	S.D.[c]	Mean[b]	S.D.[c]	Mean[b]	S.D.[c]
Construct more viewing areas along the Loop Road	3.8	1.9	4.3	1.8	4.4	1.8	3.3	1.8
Keep Loop Road open to Fish Lake in the winter	3.4	1.8	3.5	1.9	3.4	1.8	3.7	2.0
Permanently close Loop Road from Jackman Park to near Blitzen Crossing	2.7	1.8	3.0	1.9	2.3	1.6	3.6	2.4
Provide a pamphlet which describes the pioneer history of the area	5.5	1.5	5.4	1.3	5.6	1.5	5.5	1.0
Make available a short pamphlet describing the history of Indian occupation in the Steens	5.9	1.3	5.6	1.4	5.6	1.4	5.7	1.1
Adopt regulations which restrict some lakes and streams to fly fishing only	4.2	1.9	3.5	2.3	4.4	1.8	5.1	1.9
Place special creel limits which reduce the number of fish to be taken in the Steens	4.5	1.9	4.1	2.3	4.6	1.8	5.4	1.5
Place signs along Loop Road which point out locations of historic interest	4.8	1.9	5.3	1.5	5.2	1.7	4.5	1.5
Develop long distance backpacking trails	4.9	1.8	4.5	1.9	5.0	1.6	5.4	1.9
Have more rangers for law enforcement	4.1	1.5	4.3	1.6	4.1	1.5	4.6	1.7

[a] Calculations for each management item are based on at least the number of respondents indicated by N.

[b] Means are based on responses to a seven-point scale response format ranging from 9 (highly desirable) to 1 (highly undesirable).

[c] Standard deviation (S.D.) is a measure of variation in the responses around the mean.

Appendix D

RECREATION SETTING ATTRIBUTES

Table D-1. Environmental feature and social item means and standard deviations for respondents sampled in the Steens Mountain Recreation Area, grouped by their most important activity (Summer 1980).

Environmental Features And Social Items	Most Important Activity Groups							
	Camping (N=111)[a]		Fishing (N=72)[a]		Sightseeing (N=125)[a]		Hiking (N=25)[a]	
	Mean[b]	S.D.[c]	Mean[b]	S.D.[c]	Mean[b]	S.D.[c]	Mean[b]	S.D.[c]
Mule deer	8.0	1.2	7.9	1.2	7.9	1.2	8.2	1.1
Steep, rugged hillsides	7.9	1.2	7.9	1.2	8.3	1.0	8.3	1.0
Rugged canyonland areas	8.1	1.2	8.0	1.2	8.3	.9	8.7	.5
Good stream fishing	7.3	1.8	8.3	1.1	6.9	1.8	7.0	1.7
High mountain lakes	7.8	1.3	8.2	1.1	7.9	1.3	7.9	1.3
Wide panoramas	8.3	1.1	8.1	1.1	8.5	.9	8.5	.8
Sparse vegetation	6.5	2.1	6.1	2.0	6.5	1.8	6.7	1.7
Scenic vistas	8.3	1.0	7.9	1.4	8.5	.8	8.6	.6
Wild horses	6.8	1.9	6.6	2.0	6.6	2.0	6.5	2.3
Coyotes in the distance	7.1	1.8	7.3	1.6	7.0	1.7	7.8	1.4
Only 1-2 other recreation groups encountered on a given day	7.2	1.9	6.7	2.3	6.8	1.9	6.6	2.1
3-6 other recreation groups encountered on a given day	5.5	2.0	5.2	2.3	5.8	1.9	4.0	2.1
6-15 other recreation groups encountered on a given day	3.6	1.9	3.8	2.4	4.1	2.1	2.4	2.2
More than 15 other recreation groups encountered per day	2.5	1.8	2.6	2.2	2.9	2.0	1.9	2.2
Other recreationists in four-wheel drive vehicles	3.3	2.4	3.5	2.5	3.8	2.2	1.8	1.5
Developed campgrounds	5.5	2.3	5.3	2.6	5.1	2.6	3.0	2.3
Outhouse-type toilets	6.1	2.1	5.8	2.4	5.8	2.3	3.6	2.6
Picnic tables	6.4	2.0	5.9	2.3	5.6	2.2	3.2	2.4
Designated fire pits	6.4	2.1	6.3	2.3	5.9	2.3	3.9	2.6
No evidence of recreation management in the area	5.9	2.3	5.5	2.3	5.4	2.4	6.4	2.8
Well maintained hiking trails	5.9	2.0	5.5	2.2	6.4	1.9	5.5	2.4
Maps of the area	7.6	1.5	7.4	1.8	7.4	1.7	7.4	1.5
Rough roads on which only four-wheel drive vehicles can travel	5.5	2.6	5.2	2.7	4.8	2.5	3.0	2.2
Infrequently used dirt roads	6.4	2.1	5.9	2.4	6.2	2.0	4.2	2.7
Dirt roads on which traffic is frequent	4.0	2.3	3.8	2.4	4.1	2.4	2.3	1.9
Motorized traffic nearby	3.1	1.8	3.2	2.1	3.5	2.0	2.1	1.6
Motorized traffic in distance	4.1	1.8	3.9	2.0	4.1	1.7	2.9	1.8
No motorized traffic apparent	6.7	1.7	7.1	1.9	6.5	1.8	8.1	1.3
Cattle grazing	5.7	2.0	5.6	2.3	6.0	2.4	4.4	2.6
Evidence that cattle had been in area	5.3	2.0	5.3	2.2	5.6	2.2	4.0	2.1
Small man-built reservoirs in area	5.5	2.0	5.5	2.1	5.3	1.9	3.3	2.1
Power lines in the area	3.2	1.9	3.7	2.2	3.1	1.9	2.1	1.7
Fences	4.4	1.8	4.3	2.0	4.0	2.0	3.1	1.8
No evidence of man	6.8	1.9	6.6	2.3	6.5	1.9	7.5	1.9
Abandoned mines	6.0	1.8	6.1	2.0	6.1	1.7	5.0	2.1
Abandoned buildings	6.1	1.9	6.0	2.1	6.0	2.0	5.7	2.0

[a]Calculations for each item are based on at least the number of respondents indicated by N.

[b]Means are based on responses to a nine-point response format ranging from 9 (most strongly added) to 1 (most strongly detracted).

[c]Standard deviation (S.D.) is a measure of variation in the responses around the mean.

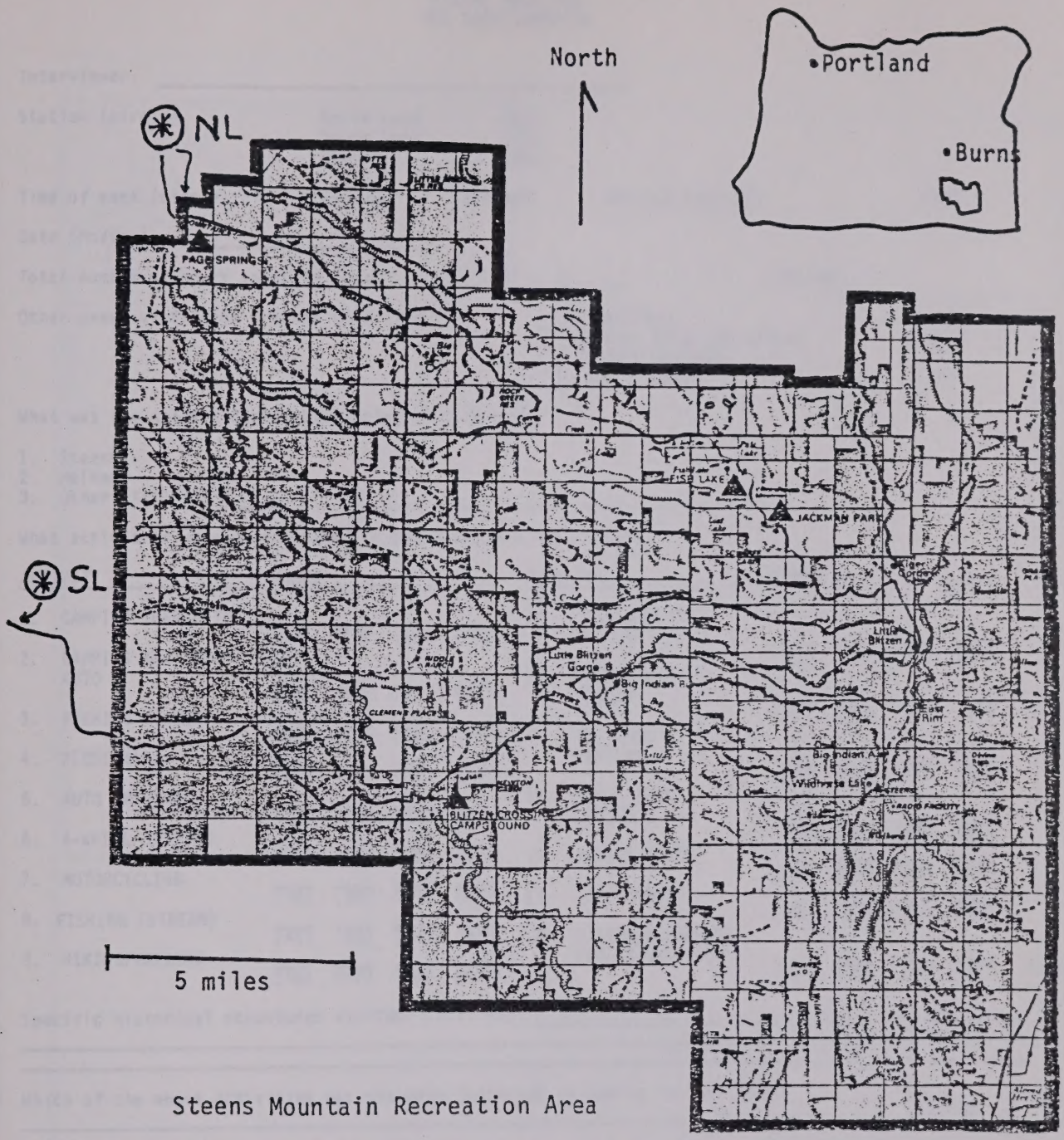
Appendix E

STEEN MOUNTAIN RECREATION AREA USE DATA

The following tables display recreation use estimates obtained as part of the user preference study conducted during the summer of 1980 in the Steens Mountain Recreation area. The study area is shown in Figure 1. This area is administered by the Burns District of the Bureau of Land Management.

To gather the data from which use estimates were made, recreationists were stopped and interviewed as they left the Steens Mountain area, either via the North Loop Road or South Loop Road. The interview sites are shown in Figure 1. The interview station on the North Loop road was between Page Springs Campground and the turnoff to the Camper Corral. The station on the South Loop Road was located approximately 3 miles off Oregon Highway 205 and just outside the boundary of the Steens Mountain Recreation area.

The interview forms used are shown in Figure 2. Data were collected on general information such as length of time spent in the area, group size, group type, and previous visits to the area. Respondents were shown a map of the Steens Mountain Recreation area divided into zones (Figure 3) and asked to indicate what recreation activities they had participated in and where. These activities were recorded on the interview form by zone.



Steens Mountain Recreation Area

Bureau of Land Management

Burns District

Figure 1. Steens Mountain study area.

NL
SL

STEENS MOUNTAIN
USE QUESTIONNAIRE

1. Interviewer: _____

2. Station (circle) North Loop (01)
South Loop (02)
Alvord (03)

3. Time of week (circle) Weekday Weekend Holiday Weekends (04)

4. Date (Mo/Day): _____

5. Total number of hours spent in area: _____ (06-08)

6. Other areas visited on present trip (check)
___ Round Barn (09)
___ Malheur Wildlife Refuge (10)
___ Diamond Craters (11)
___ Alvord Desert (12)

7. What was the primary destination point of this trip?

1. Steens
2. Malheur
3. Other (Fill in) _____

8. What activities were participated in and where did they occur?

ACTIVITY	ZONES	ACTIVITY	ZONES
1. CAMPING NEAR AUTO	(14) (15) (16) (17)	10. TECHNICAL MT. CLIMBING	(50) (51) (52) (53)
2. CAMPING AWAY FROM AUTO	(18) (19) (20) (21)	11. HORSEBACK RIDING	(54) (55) (56) (57)
3. FISHING (LAKE)	(22) (23) (24) (25)	12. BIG GAME HUNTING	(58) (59) (60) (61)
4. PICNICKING	(26) (27) (28) (29)	13. SMALL GAME HUNTING	(62) (63) (64) (65)
5. AUTO DRIVING	(30) (31) (32) (33)	14. NATURE STUDY	(66) (67) (68) (69)
6. 4-WHEEL DRIVING	(34) (35) (36) (37)	15. PHOTOGRAPHY	(70) (71) (72) (73)
7. MOTORCYCLING	(38) (39) (40) (41)	16. VISITING HISTORICAL STRUCTURES	(74) (75) (76) (77) 78-80 ID#
8. FISHING (STREAM)	(42) (43) (44) (45)		
9. HIKING/WALKING	(46) (47) (48) (49)		

9. Specific historical structures visited (fill in) _____
_____
_____

10. Which of the above activities was the most important in coming to this area? _____ (1-2)C2

11. Previous visits in the past year? (1979 ONLY)
#_____ (3-4)

12. If zero, have you ever been here before? (1) Yes (2) No (05)

13. # of people in group: #_____ (6-7)

14. # of people in vehicle: #_____ (8-9)

15. Group Type: (1) Family (2) Friends (3) Family & Friends (4) Alone (10)

Address of Permanent Residence:

Name _____

Address _____

City, State _____ Zip _____ (11-15)
78-80 ID#

Figure 2. Interview form.

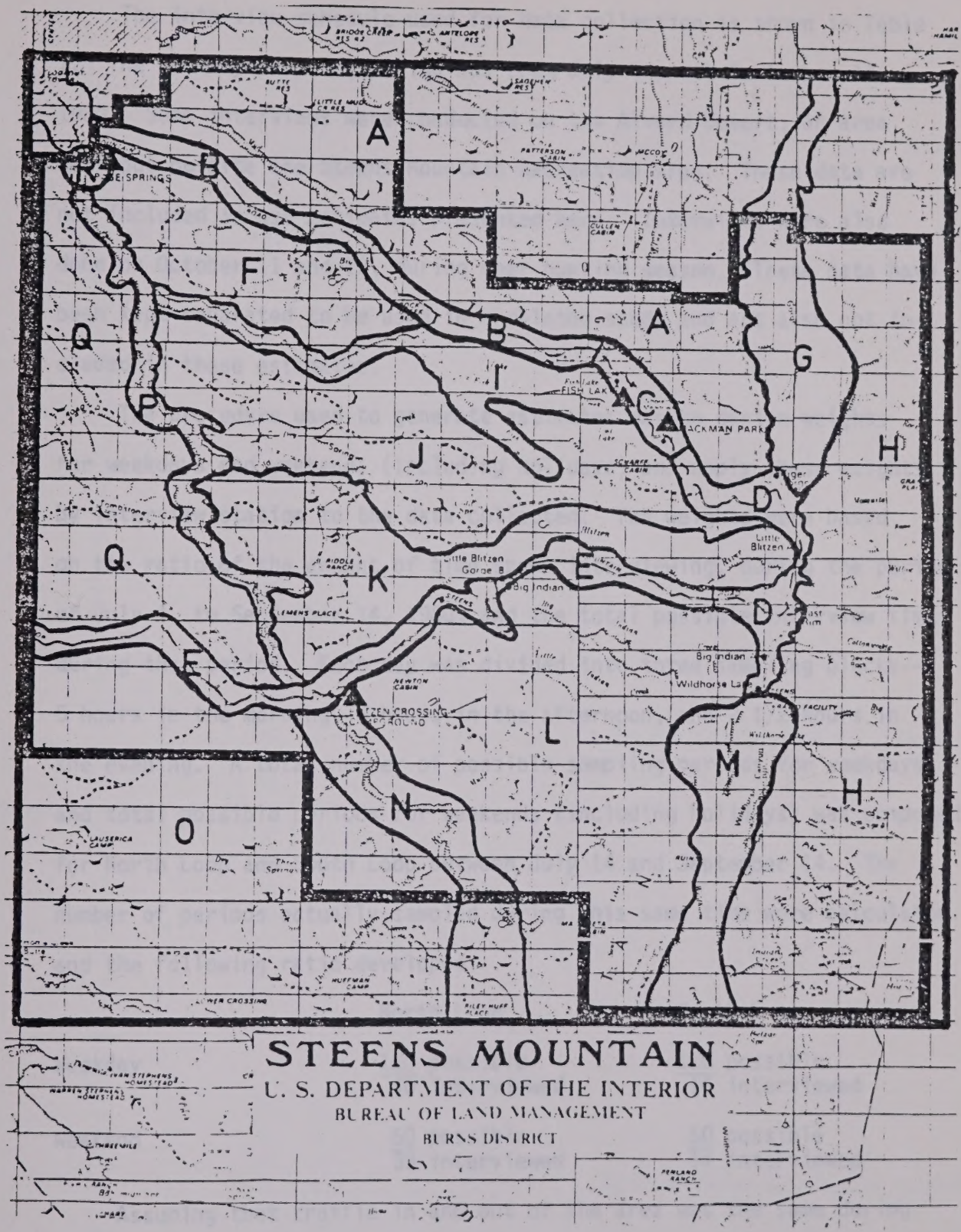


Figure 3. Steens Mountain Area zones.

The interview schedule used for data collection is shown in Table 1. The primary sampling period was from July 4 until September 14, 1980. Some interviews were conducted on the Alvord Desert, an area near but outside the Steens Mountain Recreation area. These data are not included in use estimates presented here. Interviews were also done on October 11 and 12, during deer hunting season. These data have been kept separated to be used in a related study and are also not included in these estimates.

The procedure used to generate estimates was to derive weights for weekdays and weekends (including holidays) and apply these weights by interview station to the data collected. The weights were based on the ratio of the amount of time spent interviewing, during the period of July 4, to September 14, 1980, and the total possible interview time during that period. Each day was divided into three sampling blocks--5 hours in the morning, 5 hours in the afternoon, and 2 1/2 hours in the evening. A total number of possible sampling periods for weekdays, and total possible periods for weekends (including holidays) was computed for North Loop and South Loop between July 14 and September 14. The number of periods actually sampled during this same time were calculated and the following ratio developed:

	North Loop	South Loop
Weekday	120 possible 40 interviewed	120 possible 16 interviewed
Weekend	60 possible 39 interviewed	60 possible 14 interviewed

Assuming that traffic in and out of the area was the same during interviewing and while not interviewing, the following weights were used in making use estimates:

Table 1. Steens Mountain interview schedule.

Date	Stations Covered	Notes
July 4	A	
5	NL, A	Observations at Alvord Desert
6	NL	
7	NL, SL	
8	NL	
9	NL, SL	
10		
11		
12		
13		
14		
15		
16		
17		
18		
19	NL	
20	NL	
21	NL	
22	SL	
23	NL	
24	NL	
25	NL	
26	NL, SL	
27	NL	
28	NL	
29	NL	Observations at Alvord Desert
30	NL	
31	NL	
August 1	SL	
2	NL, SL	
3	NL, SL	
4	SL	
5	NL	
6		
7		
8		
9		
10		
11		
12		
13	NL, SL	
14	NL, SL	
15	NL, SL	
16	NL, A	Observations at Alvord Desert
17	NL, SL	
18	NL, SL	
19	NL, SL	
20	NL, SL	
21	NL, SL	
22	NL, SL	
23	NL, SL	

Table 1 Continued

Date	Stations Covered	Notes
August 24	NL, SL	
25	NL	
26	NL	
27	NL	
28	NL	
29	NL, SL	
30	NL, SL	
31	NL	
Sept 1	NL, SL	
2	NL	
3	NL	
4	NL	
5	NL	
6	NL	
7	NL, SL	
8		
9	NL	
10	NL	
11	NL, SL	
12	NL	
13	NL	
14	NL, SL	
15		
Oct 11	NL, SL	Opening Hunting Season
12	NL, SL	Opening Hunting Season

[a]NL = North Loop Road

SL = South Loop Road

A = Alvord Desert

Table 1 Continued

Date		Stations Covered	Notes
August	24	NL, SL	
	25	NL	
	26	NL	
	27	NL	
	28	NL	
	29	NL, SL	
	30	NL, SL	
	31	NL	
Sept.	1	NL, SL	
	2	NL	
	3	NL	
	4	NL	
	5	SL	
	6	NL	
	7	NL, SL	
	8		
	9	NL	
	10	NL	
	11	NL, SL	
	12	NL	
	13	NL	
	14	NL, SL	
	15		
Oct.	11	NL, SL	Opening Hunting Season
	12	NL, SL	Opening Hunting Season

NL = North Loop Road

SL = South Loop Road

A = Already Opened

North Loop	Weekday	2.5
	Weekend (including holidays)	1.5
South Loop	Weekday	7.5
	Weekend (including holidays)	4.2

There are several precautions to keep in mind when interpreting these data:

1) The time period for which estimates are being made is July 4, 1980 to September 14, 1980.

2) The use reported is only of visitors exiting by way of the two routes where interviewing took place.

3) Because no sampling was done late in the evenings and due to a lack of accurate counter data to use in weighting the data, the figures in these tables may best be used to describe patterns of use, activities participated in, and overall user characteristics, rather than being representative of total use of the Steens Mountain Recreation Area. It is likely these figures under-estimate use of this area.

Table 2. Total number of parties and visitor day estimates for Steens Mountain Recreation Area

	Users	Parties	Visitor day Estimate	Average VD's/party
Total	7,007	1,773	32,729	18.46

Table 3. Estimates of parties using the Steens Mountain Recreation Area by Interview Station

Station	N	Percent
North Loop[a]	1,023	57.7
South Loop	751	42.3
Total	1,773	

[a]Includes Page Springs Campground.

Table 4. Number in group.

Number	N	Percent
1	85	4.8
2	679	38.3
3	263	14.8
4	365	20.6
5	118	6.7
6	78	4.4
7	27	1.5
8	47	2.7
9	18	1.0
10	23	1.3
11	17	.9
12	9	.5
13	3	.1
14	3	.1
15	5	.3
16	5	.3
19	9	.5
31	20	1.1
Total	1,771[a]	100

[a]Lower than total estimate because of missing values.

Table 5. Number of people per vehicle.

Number	N	Percent
1	124	7.0
2	516	46.1
3	320	18.1
4	319	18.0
5	104	5.9
6	45	2.5
7	7	.4
8	21	1.2
10	7	.4
12	7	.4
19	3	.1
Total	1,771[a]	100

[a] Lower than total estimate because of missing data

Table 6. Group composition.

Group Compisition	N	Percent
Family	970	54.9
Friends	425	24.0
Family and Friends	278	15.7
Alone	95	5.4
Total	1,768[a]	100

[a] Lower than total estimate because of missing values.

Table 7. Primary destination point of the trip.

Primary Destination	N	Percent
Steens Mountain	1,630	91.9
Malheur Wildlife Refuge	32	1.8
Alvord Desert	12	.6
Other	100	5.6
Total	1,773	100

Table 8. Other areas visited on present trip to Steens Mountain

Area	N
Round Barn	231
Malheur Wildlife Refuge	541
Diamond Craters	184
Alvord Desert	137
Total	1,093[a]

[a]Lower because not all parties visited other areas.

Table 9. Number of users of the Steens area who did not visit the area in the past year, but have visited the area before.

Did they visit before?	N	Percent
Yes	530	43.7
No	684	56.3
Total	1,214	100

Table 10. Number of previous visits in the past year.

0	1,221	71.2
1	305	17.8
2	78	4.5
3	50	2.9
4	13	.7
5	13	.8
6	3	.1
7	2	.1
8	2	.1
10	9	.5
12	6	.3
15	4	.2
25	6	.3
30	4	.2
80	3	.1
Total	1,715[a]	100

[a]Smaller than total estimate because of missing data.

Table 11. Activities participated in by zones[a]

	A		B		C		D		E		F		G		H		I	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Camping near auto	8	.7	16	1.3	679	57.5	29	3.2	166	14.1	13	1.1	--		8	.7	3	.2
Backpacking	9	6.5	--	--	14	9.7	18	13.1	--	--	5	3.6	29	20.5	3	1.8	4	2.9
Lake fishing	--	--	2	.3	491	95.8	--	--	--	--	--	--	--	--	--	--	--	--
Picnicking	--	--	24	9.8	97	39.7	93	37.8	48	19.4	--	--	--	--	--	--	--	--
Sightseeing	14	1.4	643	64.3	789	78.9	877	87.7	613	61.3	4	.4	--	--	--	--	2	.1
Four wheel driving	13	22.3	5	8.0	7	12.5	6	10.7	3	5.3	--	--	3	4.5	2	2.7	--	--
Motorcycling	14	25.5	7	12.7	35	62.7	32	58.2	18	31.8	--	--	--	--	--	--	5	9.1
Stream fishing	30	7.3	2	.4	18	4.4	4	1.0	52	12.6	4	1.0	21	5.0	--	--	27	6.5
Hiking/walking	52	4.6	22	2.0	338	30.1	644	57.4	101	9.1	18	1.6	53	4.7	11	.9	43	3.8
Technical Mountain climbing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Horseback riding	3	8.0	3	8.0	12	38.5	4	12.8	3	8.0	--	--	--	--	--	--	--	--
Big game hunting	39	35.1	3	2.3	11	10.0	18	15.9	22	20.2	--	--	5	4.1	--	--	9	7.7
Small game hunting	2	27.3	--	--	3	45.5	4	72.7	--	--	--	--	--	--	--	--	--	--
Nature Study	10	4.3	36	16.1	113	50.3	120	53.3	46	20.4	2	.7	14	6.2	2	.7	16	7.0
Photography	44	3.6	65	5.4	579	48.1	904	75.1	331	27.5	7	.6	40	3.3	12	1.0	19	1.6
Visit historical structures	8	25.0	--	--	--	--	--		--	--	--	--	--	--	3	8.3	--	--
Swimming	--		3	3.5	36	49.5	--		4	5.9	--	--	3	3.5	--	--	--	--
Boating	--		--		3		--				--		--	--	--	--	--	--
Other	--		--		3													

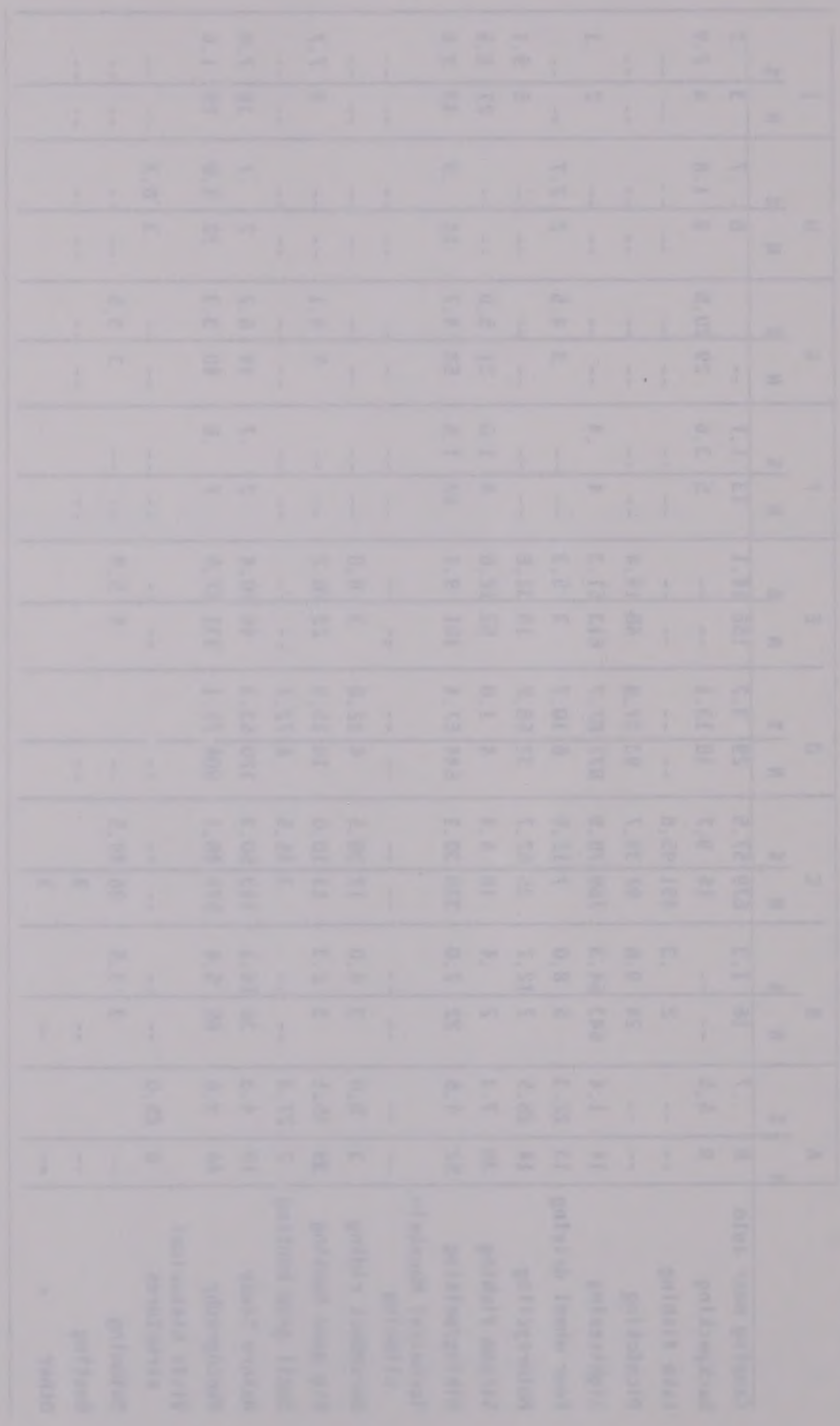


Table 11. Continued.

	J		K		L		M		N		O		P		Q		R		Total
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	Cases
Camping near auto	9	.7	4	.4	27	2.3	--	--	--	--	43	3.6	7	.6	7	.6	280	23.7	1180
Backpacking	23	16.2	24	17.2	14	10.1	35	25.5	--	--	--	--	--	--	--	--	2	1.1	139
Lake fishing	--	--	--	--	--	--	56	10.8	--	--	--	--	--	--	--	--	--	--	518
Picnicking	5	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	39	15.9	245
Sightseeing	3	.2	2	.1	5	.4	--	--	--	--	--	--	--	--	--	--	9	.9	1000
Four wheel driving	--	--	--	--	17	30.5	--	--	--	--	18	31.2	--	--	22	38.7	--	--	56
Motorcycling	3	4.5	--	--	--	--	--	--	--	--	8	13.6	2	2.7	--	--	8	14.5	55
Stream fishing	10	2.3	46	11.0	47	11.3	2	.4	10	2.3	12	2.8	208	50.4	--	--	48	11.6	409
Hiking/walking	26	2.3	54	4.8	78	7.0	120	10.7	25	2.2	53	4.7	74	6.6	2	.1	64	5.7	1121
Technical mountain climbing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Horseback riding	10	30.4	11	24.5	2	4.8	--	--	--	--	--	--	--	--	--	--	--	--	31
Big game hunting	13	11.8	3	2.7	21	18.9	--	--	10	9.1	55	50.2	7	6.1	3	2.3	--	--	110
Small game hunting	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6
Nature study	10	4.5	16	6.9	2	2.7	9	4.0	2	.7	15	6.7	17	7.6	2	.7	24	10.5	224
Photography	23	1.9	44	3.7	58	4.8	78	6.5	--	--	31	2.6	47	3.9	4	.3	81	6.7	1204
Visit historical structures	5	15.0	3	10.0	12	38.8	--	--	--	--	3	8.3	--	--	--	--	--	--	32
Swimming	--	--	--	--	--	--	3	3.5	--	--	--	--	8	11.2	--	--	21	28.6	72
Boating	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	21
Other	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3

[a] Percentages are based on the total number of parties who participated in that particular activity rather than the total number of parties. Parties could have participated in a particular activity in more than one zone, hence the percentages total more than 100%.

Table 12. Most important activity of Steens Mountain recreationists.

Activity	N	Percent
Camping near auto	364	20.5
Camping away from auto (backpacking)	38	2.1
Lake fishing	155	8.7
Picnicking	22	1.3
Sightseeing	647	36.5
Motorcycling	3	.2
Stream fishing	140	7.9
Hiking/walking	78	4.4
Horseback riding	15	.9
Big game hunting	124	7.0
Small game hunting	2	.1
Nature study	80	4.5
Photography	56	3.2
Visiting historical structures	2	.1
Swimming	14	.8
Other	33	1.9
Total	1,773	100.0

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